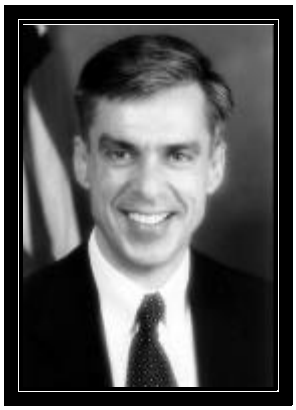
Federal Telemedicine Directory
1998

Office for the Advancement of Telehealth (OAT)
Health Resources and Services Administration (HRSA)
U.S. Department of Health and Human Services (DHHS)

From the Director, Health Resources and Services Administration



Claude Earl Fox, M.D., M.P.H.

We at the Health Resources and Services Administration (HRSA) are pleased to sponsor the *Federal Telemedicine Directory 1998*, the first national directory of telemedicine. While not inclusive of all the possible users and sites involved in telemedicine, this directory includes those sites that enjoy federal funding and so are committed to sharing their experience and knowledge for the greater good. As federal funders, we want to help everyone who could benefit, gain access to the information highway and its many health care applications.

HRSA is a leading national supporter and developer of telehealth, a term broadly referring to the use of electronic information and telecommunications technologies for a wide variety of health-related activities. These activities range from long-distance clinical care to patient and professional education to public health and health administration. We use the term telemedicine to refer more specifically to clinical care, which is the focus of the *Federal Telemedicine Directory 1998*. (Note, however, that some of these clinical projects have distance education for health professionals as a component.)

HRSA, an agency of the U.S. Public Health Service, is primarily concerned with *access* to care. Our mission and our many grant programs all focus on making sure that every American who needs health care can find the appropriate care whenever and wherever they need it. With this mission, it is only appropriate that we promote the best use of modern telecommunications and information technologies. To us, best use means that state-of-the-art health care and health information is available to every community, no matter how remote or resource-poor.

Our most recent move to enhance our work in this field has been to establish the Office for the Advancement of Telehealth (OAT). This office is designed to pool knowledge agency-wide and engage all our grantees in telecommunications activities to enhance their performance. OAT also has a strong analytic capability and will be an important national voice for sound telehealth policy. This office, together with the HRSA Office of Rural Health Policy, has promoted and produced the *Federal Telemedicine Directory 1998* as well as many salient studies on the progress of telehealth and the obstacles facing it.

Aside from the long-standing use of telecommunications for transmitting X-rays, telemedicine and telehealth applications are still in the pioneering stages of development. Many federal agencies are involved in paving the health information highway, and this directory offers a good description of their programs. HRSA also has the privilege of leading the Joint Working Group on Telemedicine, an interagency group working to coordinate telehealth activity across cabinet agencies.

In summary, we at HRSA are excited about using the National Information Highway to support our mission and to have the privilege of working with fellow agencies to multiply our knowledge and share it with the American people. The *Federal Telemedicine Directory 1998* should help extend that dialogue to everyone who wants to participate.

Claude Earl Fox, M.D., M.P.H.
Administrator
Health Resources and Services
Administration

From the Director, HRSA Office for the Advancement of Telehealth

Dena Puskin, Sc.D.

Today s health care professionals are developing and applying new concepts for telecommunications-based health care systems, or telehealth. These include telemedicine, community health information networks, electronic patient records, clinical information networks, electronic claims processing, and distance education. Though still in development, telehealth has benefited from rapid advances in telecommunications and computer technologies over the past six years. Such advancements hold great potential for all Americans.

The *Federal Telemedicine Directory 1998* is an inventory of federal telemedicine grants and contracts awarded in fiscal years 1994 through 1997. Telemedicine is not one specific technology but a means of providing clinical health services from a distance using telecommunications and medical computer science. Telemedicine can span every echelon of health care, from the first responder/emergency medical system to tertiary medical specialty consultations and home health care.

While some of the projects described here also include distance education activities, this directory is by no means all-inclusive of federally funded distance education programs for health professionals. State-by-state project descriptions were compiled from available agency information and from electronic databases. Resource agencies classified their projects either as telemedicine (for clinical purposes) and/or distance learning projects for health professions education.

The present directory grew out of an inventory of federal projects first compiled by Paulette Hansen of the Denver-based American Indian Information Network. This directory would not have been possible without another resource as well: the Federal Telemedicine Gateway, operated on the Internet by the Joint Working Group on Telemedicine. The JWGT, as it is known, is an interagency workgroup with widespread representation from federal government agencies with major telemedicine activities. The Gateway is available to anyone at <http://www.tmgateway.org>.

We at the HRSA Office for the Advancement of Telehealth (OAT) are pleased to present this new directory and to help put health care on the information highway. We see telemedicine not as an end, but as a means to improve access to health care. It is, above all, a way to help people who are geographically or functionally isolated get the health care services they need, when they need them.

Dena Puskin, Sc.D.
Director
HRSA Office for the Advancement of Telehealth
Chair, Joint Working Group on Telemedicine

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Part One
Federal Programs

PART ONE FEDERAL PROGRAMS

SECTION OVERVIEW

This section provides an overview of federal telemedicine programs by department and agency. The information presented represents grant activity as of the end of FY 1997. Most federal grant programs are managed by the National Telecommunications and Information Administration (NTIA) of the Department of Commerce, the Office for the Advancement of Telehealth (OAT) and the Office of Rural Health Policy (ORHP) of the Health Resources and Services Administration (HRSA), the Rural Utilities Service (RUS) at the U.S. Department of Agriculture (USDA), and the National Library of Medicine (NLM) at the National Institutes of Health (NIH). The U.S. Departments of Defense, Veterans Affairs, and Justice provide direct health care for personnel or program beneficiaries. These departments, along with the National Aeronautics and Space Administration (NASA), Health Care Financing Administration (HCFA), and the Appalachian Regional Commission (ARC), are involved in research and/or non-delivery projects. The information in Part One has been compiled from grant guidelines, program descriptions, and agency websites. Grant applicants are encouraged to contact the specific program representative for detailed grant notices and funding cycles.

The chart below summarizes the number of projects receiving federal agency grant dollars, the total disbursements by agency from 1994 to 1997, and known dollar totals. Not all NLM grant dollars are shown. Starting in 1996, the agency deleted this information from public databases because of concern that estimated multi-year contract values were being reported as actual amounts for tallying government-wide telemedicine spending. NLM and the Agency for Health Care Policy and Research (AHCPR) fund projects through an interagency agreement that obscures funding identification for AHCPR research. The OAT total includes two programs: telemedicine grants, and certain rural health outreach grants. Inventory total dollar amount is $110.5 million.

Federal Telemedicine Funding 1994-1997

Agency	Number of Projects	Dollar Total
Appalachian Regional Commission	3	$831,381
Health Care Financing Administration	5	$4,899,097
Indian Health Service	3	$2,389,000
OAT/Office of Rural Health Policy	48	$36,703,586
National Library of Medicine *	17	$32,625,482
National Telecommunications and Information Administration	51	$16,906,355
Rural Utilities Service	64	$16,112,806
Grand Total	**191**	**$110,467,707**

✳Includes funding for two projects funded under an interagency agreement with AHCPR. Dollar amounts for 13 projects are unavailable.

Two useful appendices have been included. Appendix A contains terms commonly used by the federal government in defining telemedicine concepts. Appendix B shows the membership of a federal interagency working group on telemedicine known as the Joint Working Group on Telemedicine (JWGT).

The JWGT concept began with Vice President Gore, who identified telemedicine as a key area requiring attention to ensure progress in the development of the National Information Infrastructure (NII). Since 1992, the Information Infrastructure Task Force (IITF), under the leadership of the U.S. Department of Commerce (DOC), has examined broad innovative uses of NII and coordinated NII initiatives throughout the federal government. In early 1994, IITF created the Health Information Application Working Group, with a subgroup that focused on telemedicine.

In 1995, Vice President Gore asked the U.S. Department of Health and Human Services (DHHS) to take a greater leadership role in developing cost-effective health applications for NII. Subsequently DOC joined forces with DHHS to form the JWGT, now chaired by the director of OAT, HRSA. This government-wide working group for telemedicine has participation from more than eight member departments and agencies. JWGT activities are summarized in a DOC publication titled *Telemedicine Report to the Congress* (January 31, 1997). Some of the major telemedicine grant and research programs managed by JWGT-member agencies are described in Part One.

A. DEPARTMENT OF AGRICULTURE

A1. Rural Utilities Service

Within USDA, RUS operates a Distance Learning and Telemedicine (DLT) Program. This grant program was created by the 1990 Farm Bill to demonstrate the ability of communities to use existing or proposed telecommunications systems to achieve sustainable cost-effective distance learning or medical link networks. The DLT Program helps rural schools and health care providers invest in telecommunications facilities and equipment and provides educational and medical resources that otherwise might be unavailable to rural areas.

Since 1993, RUS has awarded $48.8 million in grants. This amount includes $6.5 million allocated to the agency in January 1997 from the Fund for Rural America, a new program authorized by the 1996 Farm Program. In addition, $3.1 million in loans were extended with the fiscal year (FY) 1997 grant awards under a new DLT Program component. Part Two of this directory describes 64 RUS projects totaling approximately $16.1 million.

The DLT Program supports multiple, dispersed sites over a geographic area rather than a single stand-alone entity. Each project must have community support and be self-sustaining without need for further grant or loan funding. Ongoing costs for sustaining the proposed system through user fees, tax assessments, school budgets, or other funding should, to the extent possible, originate locally.

The DLT Program pays for capital costs of acquiring and installing telecommunications hardware located at schools, hospitals, and other eligible sites. Also funded are nonrecurring capital costs of establishing distance learning and telemedicine systems. System operating

expenses, including salaries, employee benefits, and travel expenses that would occur on a monthly basis, are not eligible.

Applicants are encouraged but not required to combine distance learning and telemedicine components in their proposed projects.

Applicant eligibility**:**

- Rural schools, libraries, hospitals, health care clinics, and related organizations that operate rural educational or health care facilities are eligible to apply for DLT Program funding.

- Indian tribes, consortiums or partnerships, and other incorporated organizations that operate educational or medical facilities in rural areas are eligible for funding.

- Urban institutions are encouraged to participate as network partners. Because the DLT is an exclusively rural program, grant funding will be provided only to facilitate education and/or medical services to rural areas.

- State-supported institutions that provide education and/or medical services to rural areas are eligible applicants.

- Funds will not be provided to state or local governments.

Distance learning situations include, but are not limited to:

- Linking rural schools within regions to share teaching resources.

- Linking a rural school or a group of rural schools to institutions located in metropolitan or more populated centers.

- Using rural libraries or other community facilities as distance learning centers, linking them with online resources or regional institutions.

- Using job training centers, vocational schools, or other facilities incorporated by job training programs.

Telemedicine situations include, but are not limited to:

- Rural hospital and medical clinic links to major medical centers.

- Rural hospital and medical clinic links to experts (such as radiologists) located at other rural facilities.

- Clinical interactive video consultations.

- Distance training of rural health care providers.

- Management and transport of patient information.

- ➤ The linking of rural facilities to medical expertise or library resources.

Types of equipment funded:

The DLT Program is hardware intensive, but other costs limited to the capital costs of establishing the project, e.g., software, training, and technical assistance may be considered. RUS will fund up to 90 percent of the costs of acquiring eligible equipment under a requested loan or up to 70 percent under a grant or a combined grant/loan or if the applicant fails to specifically request a loan. (See Section 7 in the Code of Federal Regulations (CFR) Part 1703 for specific guidelines.) Examples of eligible equipment include the following:

- ➤ Equipment used for distance learning classrooms, such as encoding and decoding devices, specialized cameras and video monitors, video switches, microphone mixers, computers, and local area networking equipment.

- ➤ Equipment used for telemedicine systems for physician consultation, teleradiology, and education of rural health care providers, such as teleradiology workstations, X-ray scanners, digital microscopes, and all of the above distance learning equipment.

For More Information:

Northwest U.S. Region Alaska, Idaho, Iowa, Minnesota, Missouri, Montana, North Dakota, Oregon, South Dakota, Washington, and Wyoming:

> *Jerry Brent, Director, Northwest Area Telecommunications Program, U.S. Department of Agriculture, Room 2813, South Building, Mail Stop 1595, Washington, DC 20250 Phone 202-720-1025*

Southwest U.S. Region Arizona, Arkansas, California, Colorado, Hawaii, Kansas, Louisiana, Nebraska, New Mexico, Nevada, Oklahoma, Texas, Utah, Guam, Republic of Marshall Islands, Federated States of Micronesia, North Mariana Islands, and The Republic of Palau:

> *Ken Chandler, Director, Southwest Area Telecommunications Program, U.S. Department of Agriculture, Room 2808, South Building, Mail Stop 1597, Washington, DC 20250 Phone 202-720-0800*

Northeast U.S. Region Connecticut, Delaware, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, and Wisconsin:

> *Craig Wolf, Director, Northeast Area Telecommunications Program, U.S. Department of Agriculture, Room 2859, South Building, Mail Stop 1599, Washington, DC 20250 Phone 202-690-4673*

Southeast U.S. Region Alabama, Florida, Georgia, Illinois, Indiana, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia, Puerto Rico, and Virgin Islands:

Gerald Nugent, Director, Southeast Area Telecommunications Program, U.S. Department of Agriculture, Room 2870, South Building, Mail Stop 1596, Washington, DC 20250 Phone 202-720-0715

The RUS Internet website is <http://www/usda.gov/rus/dlt/dlml.htm>. For detailed program information, see 7 CFR 1703. For proposed new rules, or to contact a listed program representative, see the June 13, 1997, *Federal Register*.

B. Department of Commerce

DOC has two agencies active in telemedicine. The agencies are the National Institute of Standards and Technology (NIST) and the National Telecommunications and Information Administration.

B1.0 National Institute of Standards and Technology

NIST, formerly the National Bureau of Standards, was established by Congress to support industry, commerce, scientific institutions, and all branches of government. (Congress renamed the agency under the Omnibus Trade and Competitiveness Act.) NIST operates under DOC s Technology Administration.

NIST manages four major programs designed to help U.S. companies compete; it also funds health care information technology projects under the Advanced Technology Program (ATP). Approximately 20 percent of today s health care costs are related to the processing of information. ATP supports cost-shared awards to companies and company-led consortia for competitively selected projects to develop high-risk, enabling technologies during the preproduct phases of research and development.

ATP will develop technologies at each of three consecutive levels:

(1) Technologies to form the foundation of a private-sector driven, nationwide information system, including tools for enterprise integration, domain identification, and business processing modeling.

(2) Technologies to make such a system efficient and user-friendly, including computerized knowledge-based systems, digital libraries, and natural language processing.

(3) Applications that directly meet health care users needs, such as clinical decision support systems and consumer health information and education systems.

The ATP builds on major industry consortia that in the past three years have begun to address the complex interoperability issues related to a national infrastructure for health care. These consortia include the Computerized Record Institute, Microelectronics and Computer Technology Corporation s Health Care Open System Trials Program, and the National Health Care Industry Consortium. Although member companies conduct research on individual technologies, ATP funding is needed to catalyze development of an infrastructure that will connect these islands of automation.

Examples of NIST s ATP contract research:

- Information tools to automate, validate, and distribute clinical practice guidelines for mass use. The three-year project s estimated cost is roughly $3.4 million, with almost $2 million requested in federal support. The sponsor is Cernet Corporation. The contact is John Landis, 2800 Rockcreek Parkway, Kansas City, MO 64117 Phone 816-221-1024.

- Creation of a health care management tool to help health care consumers better manage their own health with interactive in-home systems linking them to a wide range of clinicians and peers as well as to a vast reservoir of relevant information automatically structured for each user. The 21-month project cost is estimated at $2,560,000, with $2,000,000 requested in federal funds. The sponsor is CareSoft, Inc. The contact is J.J. Singh, 1131 South Saratoga-Sunnyvale Road, San Jose, CA 95129 Phone 408-777-4800.

- Development information technology to capture, integrate, and disseminate the many types of geographically distributed health care information in a secure, comprehensive, and simple information management environment, with the goal of opening a means to cost-effective, community-wide, collaborative health care. The three-year project s estimated cost is $39 million, with $19.2 million requested in federal funds. The sponsor is South Carolina Research Authority. The contact is Jack Corley, 5300 International Boulevard, Charleston, SC 29418 Phone 803-760-3792.

For More Information:

Bettyjoice Lide, Advanced Technology Program, National Institute of Standards and Technology, Administration A415, Gaithersburg, MD 20899 Phone 301-975-2218

B2.0 National Telecommunications and Information Administration

NTIA serves as the principal advisor to the President, Vice President, and Secretary of Commerce on domestic and international communications and information issues.

NTIA administers the Telecommunications and Information Infrastructure Assistance Program (TIIAP), which was created to promote widespread availability and use of advanced telecommunications and information technologies to serve the public interest. All projects must involve the delivery of useful, practical services in real-world environments within the grant award period.

Since TIIAP s inception in 1994, the grant program has awarded 332 grants in 50 states, the District of Columbia, and the U.S. Virgin Islands. Approximately $100 million in federal grant funds have been matched by more than $150 million in nonfederal funds. A significant portion of the funding has gone to rural regions and states.

This directory describes 51 health projects that were compiled and edited from NTIA s website. Funding for these projects totaled nearly $17 million. This amount does not include a 1995 grant award of $1.6 million to the Southern Idaho Medical Information Network a project canceled at the grantee s request.

Application Guidelines:

NTIA has significantly changed the structure of the funding categories for TIIAP in that the 1997 review process did not distinguish among access, demonstration, and planning projects. Applicants who previously applied to the program should carefully note this change. NTIA s decision not to differentiate among different categories of projects did not affect the scope of projects considered for support.

NTIA seeks to fund projects that are innovative, not necessarily in terms of technology used, but in the application of technology in a particular setting to serve a particular population or to solve a particular problem. Innovations often take the form of imaginative partnerships or organizational models, new applications of proven technologies, or creative strategies for overcoming traditional barriers to access. Projects may be exemplary in the sense that they can serve as models to be emulated, replicated, or adapted to local conditions by other organizations and communities facing similar challenges. NTIA seeks to fund a wide variety of model projects across different application areas, geographic regions, and underserved populations.

The five application areas include (1) community networking; (2) education, culture, and lifelong learning; (3) health; (4) public services; and (5) public safety.

Health:

Projects in this area involve the use of information infrastructure in the delivery of health and home health care services and the performance of core public health functions.

Examples of health projects may include, but would not be limited to:

- ➤ Systems that improve the care and treatment of patients in the home environment.
- ➤ Telemedicine systems that offer new approaches to extending medical expertise to rural or underserved urban areas or non-traditional settings, such as schools.
- ➤ Projects designed to improve communication between health care providers and patients and enable consumers to participate more actively in their health care.
- ➤ Projects to improve treatment of patients in emergency situations and extend trauma care services beyond the emergency room.
- ➤ Networks or information services aimed at disease prevention and health promotion.

Funding Availability:

Twenty million dollars is available for FY 1998 grant awards. Based on past grant rounds, the average size of each grant award will be approximately $350,000, although an applicant may request up to $750,000 in federal support.

Eligible Organizations:

State, local, and Indian tribal governments; colleges and universities; and nonprofit entities are eligible to apply. Individuals and for-profit organizations are not eligible.

Matching Funds Requirement:

Grant recipients under this program will be required to provide matching funds toward the total project cost. Applicants must therefore document their capacity to supply matching funds in the form of cash or in-kind contributions. Grant funds under the program will be released in direct proportion to local matching funds documented as expended. NTIA will supply up to 50 percent of the total project cost, unless the applicant can document extraordinary circumstances warranting a grant of up to 75 percent. Federal funds (such as grants) generally may not be used as matching funds, except as provided by federal statute. For information about whether particular funds may be used as matching funds, the applicant should contact the federal agency that administers the funds in question.

For More Information:

Stephen J. Downs, Director of the Telecommunications and Information Infrastructure Assistance Program, National Telecommunications and Information Administration, U.S. Department of Commerce, 1401 Constitution Avenue NW, HCHB Room 4092, Washington, DC 20230 Phone 202-482-2048, Fax 202-501-5136, E-mail <tiaap@ntia.doc.gov>

C. DEPARTMENT OF DEFENSE

The Department of Defense (DoD) uses telemedicine technology to provide direct health care delivery to military personnel through a large network of tertiary facilities. DoD is also involved in the rapid prototyping of telemedicine applications for battlefield conditions. Information on DoD s telemedicine activities is available on the Internet at <http://www.matmo.org>.

D. DEPARTMENT OF JUSTICE

The Department of Justice (DOJ) funds demonstration projects to examine the benefit of using telecommunications to provide safe and effective access to care for its inmate population and to avoid costly patient transfers.

E. DEPARTMENT OF HEALTH AND HUMAN SERVICES

E1.0 Agency for Health Care Policy and Research

AHCPR was established in December 1989 within DHHS. The agency s mission is to support research designed to improve the quality of health care, reduce its costs, and broaden access to essential services. AHCPR s Center for Information Technology conducts and supports studies of health information systems, computerized patient record systems, and medical decision analysis, including data standards, automated medical records, and decision support systems.

The Center s research is one component of AHCPR s participation in NII as one of 12 members in the High Performance Computing and Communications (HPCC) Program of the

United States. These Clinton Administration initiatives promote increased speed and capacity of computers and electronic networks, as well as make the transmission and storage of data more secure. AHCPR will fund $4.55 million to support this research over a three-year period. The agency funds projects independently and under an interagency agreement with the National Laboratory of Medicine. This directory includes two AHCPR projects managed by the National Laboratory of Medicine (see Texas A&M University and Missouri Washington College).

For More Information:

Luis Kun, Ph.D., Senior IT Advisor, Agency for Health Care Policy and Research, 2101 East Jefferson, Room 602, Rockville, MD 20852 Phone 301-594-1483

E2.0 Health Care Financing Administration

HCFA s Office of Clinical Standards and Quality began a three-year demonstration of Medicare fee-for-service payment of telemedicine services in October 1996. The demonstration is focused primarily on medical consultations involving a primary care practitioner (PCP), a patient located at a rural site (spoke), and a medical specialist (consultant) located at a medical center (hub) facility, with the PCP seeking advice from the consultant concerning the patient s condition or course of treatment.

In this project, HCFA is using its demonstration authority to allow reimbursement for teleconsulting services for Medicare beneficiaries at 57 Medicare-certified facilities (53 short-term hospitals, one state psychiatric hospital, and three rural health clinics) associated with five telemedicine projects: (1) the East Carolina University project in North Carolina, (2) the Mercy Foundation (Midwest Rural Telemedicine Consortium) project in Iowa, (3) the Iowa Methodist Health System project, (4) the West Virginia University project, and (5) the Medical College of Georgia/University of Michigan Telemedicine project. These sites were selected from proposals submitted during HCFA s 1993 and 1994 general research solicitations, and HCFA does not expect to add additional projects to the demonstration.

The Medicare telemedicine demonstration is being conducted to address concerns of limited access to medical specialists by persons in rural areas, a problem that advanced telecommunications technologies can help remedy by providing remote access to such specialists. However, Medicare rules require that services be provided according to accepted professional standards, which for clinical consultation means a face-to-face encounter between patient and practitioner. Thus, the objectives of this demonstration are to assess the feasibility, acceptability, cost, quality, and access to services that could be made available through Medicare reimbursement for teleconsultation. The evaluation focuses on teleconsultation rather than applications such as teleradiology or the interpretation of transmitted images, which are generally already reimbursed by Medicare because the standard practice of reading an image does not involve a practitioner and face-to-face patient meeting.

Looking beyond the demonstration, Medicaid and Medicare managed care have different policies regarding telemedicine. Medicaid rules do not mandate the face-to-face encounter required in Medicare, so a federal payment waiver is not required for states to implement Medicaid coverage of telemedicine. Currently, Arkansas, California, Georgia, Illinois, Iowa, Kansas, Montana, North Dakota, South Dakota, Virginia, and West Virginia cover some aspect of telemedicine (beyond teleradiology) under their state Medicaid programs. For managed care,

federally qualified HMOs in the Medicare Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) Risk Program may offer telemedicine services without a waiver, although they do not receive additional reimbursement for such services. Also, under the Balanced Budget Act of 1997, Medicare must begin reimbursement for teleconsultation services in rural health professional shortage areas by January 1, 1999. Although these coverage regulations must be promulgated before concluding the demonstration, it is hoped that continued evaluation and analysis of the demonstration will enable HCFA to fine-tune its teleconsultation coverage policies to promote the efficient use of telecommunications technologies and increase access to high-quality health care for Medicare beneficiaries.

For More Information:

Lawrence Kucken, Office of Clinical Standards and Quality, Health Care Financing Administration, 7500 Security Boulevard, Baltimore, MD 21244-1850 Phone 410-786-6694, Fax 410-786-5534

E3.0 Indian Health Service

The Indian Health Service (IHS), an agency within the DHHS, is responsible for providing federal health services to Indians and Alaskan Natives. The provision of health services to federally recognized Indians grew out of a special relationship between the federal government and Indian tribes. The government-to-government relationship is defined by numerous treaties, laws, Supreme Court decisions, and Executive Orders.

IHS, the principal health care provider and health advocate for Indian people, has as its goal to raise the health status of those it serves to the highest possible level. IHS provides health services to approximately 1.4 million Indian and Alaskan Natives who belong to more than 550 federally recognized tribes in 34 states. In addition, limited funding is provided to 34 urban Indian health sites.

Tribes may assume management and control of health care delivery programs from federal authorities through self-determination contracts or self-governance compacts. Of the agency s 1996 budget authority of $2 billion, $282 million was transferred to 41 tribes through self-governance annual funding agreements and $332 million through self-determination contracts with 235 tribes. IHS officials anticipate that over the next three to five years, almost half of the Indian and Alaskan Native beneficiaries will receive health services directly from the agency, with the remainder of the IHS budget administered and managed by tribes through self-determination compacts and contracts.

This directory describes three telemedicine projects within the IHS the Alaska Native Medical Center, the Navajo Nation Area Indian Health Center, and Warm Springs Health and Wellness Center, Oregon. Other local service units and tribes are either using or planning telemedicine applications. Many of these efforts were represented at the *Tribal Health Care 2000: Telemedicine and Telecommunications Conference*, held July 15-17, 1997. The conference was developed by the American Indian Information Network (AIIN) in association with IHS, HRSA s ORHP, and the American Telemedicine Association, along with other major sponsors. For conference information, contact Paulette Hansen, American Indian Information Network, P.O. Box 32136, Washington, DC 20007 Phone 202-342-2702 or E-mail <pchansen@erols.com>.

For More Information:

Mark Thomas, Division of Facilities and Environmental Engineering, Indian Health Service, Twinbrook Metro Plaza, 12300 Twinbrook Parkway, Suite 600, Rockville, MD 20852 Phone 301-443-7998, E-mail <mthomas@ihs.dhhs.gov>

E4.0 Health Resources and Services Administration, Office for the Advancement of Telehealth/Office of Rural Health Policy

The Office for the Advancement of Telehealth (OAT) promotes the best use of modern telecommunications and information technologies to bring state-of-the-art health care and health information to every community, especially the poor and the isolated. Established in May of 1998, OAT is part of HRSA, whose mission is to assure access to health care for the nation s most needy and underserved populations. At the national level, the office acts as a voice for sound telehealth policy and works to assure that federal activity in telehealth is coordinated across cabinet agencies. Within the agency, OAT integrates a full range of telecommunication and information technologies into all the agency s activities. The office will administer existing and new telemedicine demonstrations in medically underserved and hard-to-reach areas. OAT will also expand the agency s evaluation activities and coordinate the development of those evaluation tools with other federal agencies engaged in supporting telemedicine.

Previously administered by the HRSA Office of Rural Health Policy, the agency s telemedicine grant program has, to date, been designed to facilitate the development of rural health networks and to yield measurable data on telemedicine s effectiveness while bringing care to rural America. The OAT will expand that focus to all medically underserved areas.

Current funding for telemedicine is provided through two distinct grant programs the Rural Telemedicine Grant Program and the Rural Health Services Outreach Program.

E4.1 Rural Telemedicine Grant Program

The goal of the Rural Telemedicine Grant Program is to improve access to quality health services for rural residents and reduce the isolation of rural practitioners through the use of telemedicine technologies. The two program objectives are as follows:

(1) To demonstrate how telemedicine can be used as a tool in developing integrated systems of health care, thereby improving access to health services for rural residents across the lifespan and reducing the isolation of rural health care practitioners.

(2) To evaluate the feasibility, costs, appropriateness, and acceptability of rural telemedicine services and technologies. Such evaluation is needed to determine how best to organize and provide telemedicine services in a sustainable manner.

Applicants may propose project periods of up to three years. However, applicants are advised that continued funding of grants beyond the fiscal year shown in the grant announcement is subject to the availability of funds and grantee performance.

Applicant Network Participation Requirements:

- Applicants must be a multispecialty entity (e.g., hub) located in an urban or rural area that can provide 24-hour access to a minimum range of specialty health care services (see below). For the purpose of this grant program, a multispecialty entity may be a tertiary care hospital, a multispecialty clinic, or a collection of facilities that, combined, could provide 24-hour specialty consultations.

- Applicants should have at least two rural health facilities (e.g., spokes), which may include small rural health facilities (fewer than 100 staffed beds), rural physician offices, rural health clinics, rural community health centers, or rural nursing homes.

Clinical Network Service Requirements:

- Applicants must provide a minimum of seven clinical telemedicine services over the network, one of which must be used to stabilize patients in emergency situations. Not all services need to be provided to all sites.

- The applicant and its network members must select the other six services to be provided. These services must be based on the documented needs of communities to be served.

- In addition to emergency stabilization services, at least two of the grant-funded services provided by the telemedicine network must be consultant services of physician specialists.

- All services provided with funding from this grant program must be available from the multi-specialty entity on a 24-hour basis unless there is strong justification for more limited availability. An entity is considered capable of providing 24-hour specialty consultations if it has specialists on call.

Permissible Use of Grant Funds:

- Operating costs of the telemedicine system, including compensation for consulting and referring practitioners.

- Transmission costs and clinician compensation payments; costs incurred in rural communities, including rural staff salaries and equipment maintenance; and equipment placed in rural communities, regardless of where purchased (50 percent or more of grant award must be spent in these combined areas).

- Equipment to provide clinical services and to serve a variety of nonclinical purposes, including didactic education, administrative meetings, etc. Grant dollars may not be used to support didactic distance education activities.

- Transmission costs such as the cost of satellite time or the use of phone lines. However, those applicants who anticipate high transmission rates for all or some of their sites should consider activities to achieve more sustainable rates.

- Clinical compensation payments up to a maximum of $60 per practitioner per consult. If a third payer, including Medicaid or Medicare, can be billed for a consult, the grantee may not provide the practitioner with an OAT/ORHP-funded compensation payment.

- Purchase, lease, or installation of equipment used inside the health care facility for providing telemedicine services, such as codecs, cameras, monitors, computers, multiplexers, etc. (No more than 40 percent of the total grant award may be used for this purpose each year.)

Impermissible Use of Grant Funds:

- To purchase or install transmission equipment, such as microwave towers, satellite dishes, amplifiers, digital switching equipment, or to lay cable or telephone lines.

- To build or acquire real property, or to construct or renovate except for minor renovation related to equipment installation.

Cost Participation:

- The amount will indicate community and institutional support for the project and its likelihood of continuing after federal grant support has ended. Cost participation may be calculated in cash or in-kind services (e.g., equipment, personnel, building space, indirect costs).

Eligible Applicants:

- A grant award will be made either to (1) an entity that provides health care and is a member of an existing or proposed telemedicine network or (2) an entity that is a consortium of health care providers that are members of an existing or proposed telemedicine network.

- Recipients must be public (nonfederal) or private nonprofit entities located in a rural or urban area. Other telemedicine network members may be public or private, nonprofits or for-profit. Health facilities operated by a federal agency may be members of the network but not the applicant.

- All spoke facilities supported by this grant must meet one of two criteria: (1) be located outside of a Metropolitan Statistical Area (MSA) or (2) be located in one of the specified rural census tracts of the MSA.

Statutory Funding Preferences for Networks:

- Networks with the majority of health care providers serving in the rural areas or regions within their service areas.

- Any federally qualified health centers, rural health clinics, and local public health departments serving in the rural area or region.

- ➤ Outpatient mental health providers serving in the rural area or region.

- ➤ Appropriate social service providers (e.g., agencies on aging, school systems, and providers under the Women, Infants, and Children [WIC] program to improve access to and coordination of health care services).

In the 1997 grant cycle, OAT/ORHP issued 18 new grants in 18 states.

For More Information:

Telemedicine Grant Program Information

Cathy Wasem or Amy Barkin, Office for the Advancement of Telehealth, 979 Rollins Avenue, Rockville, MD 20852 Phone 301-443-0202 or 301-443-1293, E-mail <cwasem@hrsa.dhhs.gov>,<abarkin@hrsa.dhhs.gov>

E4.2 Rural Health Services Outreach Grant Program

The Rural Health Services Outreach Grant Program is administered by ORHP, HRSA. However, those individual projects which focus on telecommunication technologies for clinical care service integration or distance learning are managed by OAT project officers. The Outreach Grant Program, itself, funds collaborative projects that bring health care to rural areas that lack service. Grants are awarded for either direct provision of health services to rural populations that are not currently receiving them, or to enable access to and better utilization of existing services.

Projects may include the use of telecommunications technologies to provide clinical care, distance learning, or data sharing, or to achieve other service integration goals.

Applicants are required to form a working consortium with two or more organizations in order to pool scarce local resources and better integrate the provision of local services. The consortium members must be composed of three or more health care organizations or a combination of three or more health care and social service organizations. Individual members might include such entities as hospitals, public health agencies, home health providers, mental health centers, substance abuse service providers, rural health clinics, social service agencies, health profession schools, local school districts, emergency service providers, civic organizations, and the like.

In the 1997 grant cycle, ORHP funded 53 new outreach grants of which 3 use telecommunication technologies.

For More Information:

Rural Health Services Outreach Program Information:

Eileen Holloran, Robert Anson, or Cassandra Lyles, Office of Rural Health Policy, 5600 Fishers Lane, Room 9-05, Rockville, MD 20857 Phone 301-443-0835

E5.0 National Institutes of Health, National Library of Medicine

The NLM offers two programs to encourage the use and development of telecommunications infrastructure. One program funds Internet access for health professionals engaged in education, research, clinical care, and administration. The second program supports projects that develop and demonstrate the use of NII in health care, clinical research, and public health.

E5.1 High Performance Computing and Communications Program

The HPCC program has three purposes: (1) to evaluate the impact of telemedicine on cost, quality, and access to health care; (2) to assess various approaches to ensuring the confidentiality of health data transmitted across electronic networks; and (3) to test emerging health data standards. This research program affects rural, suburban, and inner-city areas.

This directory includes 30 high-performance computing and telemedicine contract descriptions. Not all NLM projects described in this directory include a contract amount because performance periods range from one to five years, and full funding is subject to availability and performance. NLM avoids wide dissemination of these amounts because reporting errors may occur if estimated spending is included in government-wide telemedicine spending tallies.

For More Information:

> *NLM National Telemedicine Initiative, National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20894 Phone 301-402-4100, Fax 301-402-4080, E-mail <telemed@nlm.nih.gov>, Internet website <http://www.nlm.nih.gov>*

E5.2 Internet Connections for Medical Institutions

NLM funds resource grants for Internet connections for health-related facilities. The grants are available three times a year February 1, June 1, and October 1. Indirect costs are not provided, and the applicant is responsible for the planning, direction, and execution of the proposed project. The project must be completed in one year.

Grant funding is limited to $30,000 for a single institution or $50,000 for a group of institutions. Eligible costs may include extending extant connectivity to outlying sites or otherwise furthering NLM s goal of expanding information outreach. Other eligible costs include the Internet connection, gateway or router equipment, associated communications hardware, the leased line and its installation, local area network user support staff, and Internet service provider fees. The applicant is expected to fund personnel, personal computer, and local area network costs. Project emphasis should be towards initiating institution-wide Internet access; therefore, costs for website development are discouraged.

All applicants, particularly those unfamiliar with the application review form and procedures, are encouraged to contact Ms. Frances Johnson for assistance as needed in completing the application or in determining eligibility.

For application kits and program information:

Division of Extramural Outreach and Information Resources, National Institutes of Health, 6701 Rockledge Drive, MSC 7910, Bethesda, MD 20992-7910 Phone 301-435-0714, E-mail <asknih@od.nih.gov>, Internet website <http://www.nlm.nih.gov>

Frances Johnson, Division of Extramural Programs, National Library of Medicine, Building 38A Room 5S-506, Bethesda, MD 20894 Phone 301-496-4621, Fax 301-402-0421, E-mail <frances_johnson@ccmail.nlm.nih.gov>

F. Department of Veterans Affairs

Telemedicine in the Veterans Health Administration (VHA) encompasses a broad variety of innovative applications that use information and communications technologies to provide and support health care for veterans. VHA is the largest integrated health care delivery system in the United States, consisting of 22 Veterans Integrated Service Networks (VISNs), 173 medical centers, over 500 ambulatory care and community-based clinics, 131 nursing homes, 40 domicilaries, 73 home health care programs, and 206 readjustment counseling centers (Vet Centers).

Telemedicine activities in VHA have included teleradiology, telepathology, telecardiology, telemental health, teledermatology, telenuclear medicine, teledentistry, telecare in diabetes, and other applications. Telemedicine in VHA takes a broad view by building upon a range of technologies from telephone-based programs to integrated imaging systems and interactive video conferencing.

Telemedicine in VHA can serve as an important operational strategy to support VHA mission goals and objectives for excellence in health care, as outlined by Undersecretary for Health Kenneth W. Kizer, M.D., M.P.H., in *Prescription for Change* and *Journey of Change*.

The Telemedicine Strategic Healthcare Group was established in VHA in 1997 to further optimize, coordinate, evaluate, and develop VHA telemedicine activities. Its mission is to improve access, coordination, continuity, and health care outcomes for veterans through telemedicine applications and strategies.

Telemedicine activities are being continually evaluated and implemented through the leadership and vision of the 22 VISN offices and the VHA facilities within the networks. VHA is actively involved in evaluating different telemedicine applications as well as in defining the role of telemedicine applications within the overall clinical and information management processes.

Additional information regarding VHA telemedicine activities is available on the VHA telemedicine web page at <http://www.va.gov.telemed>.

For More Information:

M. Anthony Graham, M.D., Chief Consultant, Telemedicine Strategic Healthcare Group, Veterans Health Administration, 810 Vermont Avenue, NW, Mail Symbol 11T, Washington, DC 20420 Phone 202-273-8563, Fax 202-273-9126, E-mail <tony.graham@mail.va.gov>

G. APPALACHIAN REGIONAL COMMISSION

ARC is a federal, state, and local partnership that provides economic and social development programs in the Appalachian Region. ARC was created in 1965 and has an annual budget of $305 million.

Since 1989, ARC has funded 149 projects under a broad definition of telecommunications. Priority funding goes to projects that support planning and feasibility studies; demonstration programs; development of multisector telecommunications networks (including telemedicine applications); community awareness seminars on the uses of telecommunications services for the education, government, business, and health sectors; professional training programs; and telehealth and related demonstration projects. ARC frequently develops partnerships with other federal agencies such as the Economic Development Administration, RUS, NTIA, and the Tennessee Valley Authority. ARC has also funded several ORHP grant recipients over various funding years. Most notable is the West Virginia Mountaineer Doctor TV (MDTV) ($28,750) and Kentucky TeleCare ($495,256).

Two ARC projects are shown in Part Two South Carolina Greenville Hospital, and the Western New York Rural Health Association.

For More Information:

Harry Roesch, Human Resources Specialist, Appalachian Regional Commission, Room 629, 1666 Connecticut Avenue, NW, Washington, DC 20235 Phone 202-884-7691.

H. NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA has been active in telemedicine technology for four decades. Its space medical research has been applied elsewhere to provide benefits for the American people and the health care industry. Its principal objective in furthering the development and adaptation of telemedicine technologies is to enhance the delivery of health care in support of human space flight.

A number of NASA centers are involved in technology development activities for telemedicine. These centers include the Ames Research Center (Moffet Field, CA), Goddard Space Flight Center (Greenbelt, MD), NASA Headquarters (Washington, DC), Jet Propulsion Laboratory (Pasadena, CA), Johnson Space Center (Houston, TX), Lewis Research Center (Cleveland, OH), Langley Research Center (Hampton, VA), and Marshall Space Flight Center (Huntsville, AL). In addition, NASA has partnered with several universities and other agencies, including the Defense Advanced Projects Research Agency (DARPA) and DoD to further develop telemedicine technologies.

In July 1997, NASA established a Commercial Space Center (CSC) for Medical Informatics and Technology Applications at the Yale University School of Medicine. This CSC is focused on developing technologies that can support NASA s telemedicine activities through the collaborative development of sensors, transmitters, effectors, processors, and simulators (STEPS).

The following is a partial list of other activities currently under way at NASA:

- Spacebridge to Russia An Internet-based telemedicine testbed between U.S. and Russian medical centers that uses the world wide web for clinical consultation and medical education.

- Telemedicine Instrumentation Pack A portable telemedicine system being developed at the NASA Johnson Space Center for in-flight (in space) medical operations.

- Advance Communications and Technology Satellite (ACTS) A communications satellite that has been used to transmit several demonstrations between medical centers in the United States.

For a more comprehensive review of NASA telemedicine, see the NASA telemedicine website at <http://www.hq.nasa.gov/office/olmsa/aeromed/telemed/>.

NASA continues to develop virtual environment technology, computer and information systems, sensor technology, haptic interfaces, imaging and compression, wireless communications, and robotics, which has direct applications to telemedicine.

For More Information:

Charles Doarn, Program Executive, Aerospace Medical Program, NASA Headquarters, Mail Code UO, Room 8U11, 300 E. Street, SW, Washington, DC 20546 Phone 202-358-0821, Fax 202-358-3038, E-mail <chuck.doarn@hq.nasa.gov>

Part Two
Projects by State

PART TWO PROJECTS BY STATE

SECTION OVERVIEW

This section contains a state-by-state project description of telemedicine grants and contracts awarded in fiscal years (FYs) 1994 through 1997. The inventory contains agency information compiled and edited from printed and electronic databases and project summaries.

Two indices listing these projects are provided for the reader. Index One lists the projects by federal agency, and Index Two lists projects by grantee type.

ALABAMA

CARRAWAY METHODIST HEALTH SYSTEM The Carraway Methodist Health System (CMHS) is a nonprofit major medical system serving northwest Alabama. CMHS goals are to create a widespread telemedicine and distance learning network and to place a rural medical clinic staffed by a nurse practitioner in Sulligent, Lamar County. Grant funds will be used to purchase equipment supporting medical service delivery and distance learning. Specific project components include: (1) an interactive video conferencing network to link rural hospitals/clinics with major clinics and learning networks; (2) a teleradiology network; and (3) Internet access to online community wellness education, medical databases, pharmaceutical updates, E-mail, news, and other information groups.

Rural Utilities Service grant of $285,000 FY 1996

Ken Dover, Carraway Methodist Health System, 1600 Carraway Boulevard, Birmingham, AL 35234 Phone 205-226-6138

CENTER FOR HEALTH INFORMATION, UNIVERSITY OF SOUTH ALABAMA This project creates a Community Health Information Network (CHIN) in Mobile County to serve doctors and support staff in area hospitals and health centers. With this project, doctors and staff may communicate by electronic mail, access patient records from any location, get patient test results, and research medical information on the Internet. This project connects 19 locations to the university, the Mobile County Health Department, the Franklin Memorial Primary Health Center, and the Mostellar Medical Center. The project partners are the main health care providers for the area s 85,000 low-income people.

National Telecommunications and Information Administration grant of $224,744 towards a total project cost of $594,949 FY 1995

James Kotis, Center for Health Information, University of South Alabama, 367 University Boulevard, CSAB- 234, Mobile, AL 36688 Phone 334-460-7395

RURAL ALABAMA HEALTH ALLIANCE This project links medical clinics in four counties. Service examples include opthalmoscopic and otoscopic exams, trauma care and pulmonary

consultations, and teleradiology. Video conferencing and access to other networks will be provided.

Rural Utilities Service grant of $300,000 FY 1995

Gary Magouirk, M.D., Rural Alabama Health Alliance, 1023 Street Northwest, Fayette, AL 35557 Phone 205-932-3891

ALASKA

ALASKA NATIVE MEDICAL CENTER The Alaska Native Medical Center is an Indian Health Service (IHS) tertiary care hospital for six facilities and a telemedicine provider for 80,000 people, including American Indians and Alaskan Natives living in both rural and urban areas. The center provides general medicine/primary care and general surgery services. Specialty services include cardiology, emergency medicine, gynecology, neurology, obstetrics, oncology, ophthalmology, orthopedics, pathology, pediatrics, physical medicine, primary care, psychiatry, and rheumatology. The Alaska Native Medical Center operates from a new facility that opened in June 1997.

IHS internal budget allocation for this activity includes $2.25 million for telecommunications and $135,000 for equipment cost.

Denver Lodge, Biomedical Engineering, Alaska Native Medical Center, 4315 Diplomacy Drive, Anchorage, AK 99508 Phone 907-729-2591

BRISTOL BAY AREA HEALTH CORPORATION The Bristol Bay Area Health Corporation is a Native American tribal organization and sole provider of comprehensive public health and primary care services to 32 villages in southwest Alaska. The 46,000-square-mile service area is primarily accessible by air. Air transport costs range between $70 and $6,000, depending on whether the travel is by scheduled flight, charter, or emergency medical evacuation. The project expands telemedicine facilities, so a distant physician may actually view the patient s symptoms, more accurately diagnose health problems in the villages, and reduce travel. The villages are located in the boroughs (counties) of Aleknaaik, Chiginik, Chiginik Lake, Lagoon, Clark s Point, and Dillingham.

Rural Utilities Service grant of $300,000 FY 1997

Christine Decourtney, Director of Planning and Communications, Bristol Bay Area Health Corporation, P.O. Box 130, Dillingham, AK 99576 Phone 907-842-9422, Fax 907-842-9354

COPPER VALLEY INTERACTIVE TELEVISION NETWORK This project establishes an interactive television network within a 24,663-square-mile area to serve seven public schools in six remote communities, the Prince William Sound Community College, and four medical clinics. The medical clinics will be interconnected and teleradiological equipment installed at the Cross Road Medical Center with a radiological link to Palmer. The telecommunications network design is a two-way interactive satellite transmission combined with existing telephone lines in a T-1 format.

Rural Utilities Service grant of $487,776 FY 1994

Donna Tollman, Copper Valley Economic Development Council, Inc., Box 9, Glennallen, AK 99588 Phone 907-822-5001

COUNCIL OF ATHABASCAN TRIBAL GOVERNMENTS The Council of Athabascan Tribal Governments is the telecommunications coordinator for this project. The council works with the University of Alaska (Fairbanks) Interior Aleutian Campus and AT&T Alascom to implement an operational system for delivering Internet-based critical educational and medical services. The Yukon Flats service region has virtually no telecommunications access due to poor connectivity and prohibitive costs. This project serves tribal members and villages, village government councils and employees, health-aid providers, health professionals, rural human services/prevention workers, degree programs for university students, and adult community education.

Rural Utilities Service grant of $317,729 FY 1996

Patricia Stanley, Council of Athabascan Tribal Governments, P.O. Box 33, Fort Yukon, AK 99740 Phone 907-662-2587

NORTH SLOPE BOROUGH The North Slope Borough (NSB), created in 1972 as the largest county in the United States, serves an area of 96,000 square miles above the Arctic Circle. With no connecting roads, all communities must be reached by air. Of the 6,538 residents, nearly 5,000 are Inupiat (North Eskimo). Government and educational services are provided to Barrow and surrounding villages by 14 borough departments, 10 schools, and the two-year Ilisagvik College. With the exception of the 2,000-student school district, regional communication depends on telephone and fax. Project partners include the borough, the school board, Ilisagvik College, the Alaska Telemedicine Project at the University of Alaska, and the Alaska Area Native Health Service. This project allows the Arctic Circle communities to share costs for the design, planning, and implementation of a single, unified, community-based wide area network. The new network will link village clinics through compressed video to the IHS in Barrow; similar technology will link Barrow Hospital to the Alaskan Native Medical Center in Anchorage. The new configuration enables the Anchorage hospital to exchange medical records electronically with Barrow instead of waiting two or more weeks for a mail delivery. In addition, improved high-speed communication among the various health facilities is expected to reduce by more than 20 percent the need for medivacs between Barrow and village clinics, and between Barrow and Anchorage. The network will also improve billing procedures, facilitate physician interaction for diagnoses, and enable administrative agencies to share documents online and to send and receive E-mail. A cost-effective, PC-based communications system integrating police and firefighting systems will replace the existing computer-assisted police protection system.

National Telecommunications and Information Administration grant of $350,000. Total project cost of $700,000 FY 1996

Carolyn Anderson, Box 69, Barrow, AK 99723 Phone 907-852-0240

VILLAGE TELEMEDICINE PROJECT, UNIVERSITY OF ALASKA This project builds upon the organizational successes of the Alaskan telemedicine efforts to coordinate the replication of scaled, tested approaches to telemedicine and health care informatics in rural Alaska. Working partners include the university and civilian, military, and Native health care organizations. Access will be provided to Internet-based medical and health care bibliographic databases and electronic publications, practice guidelines, expert systems, as well as a computer-based patient records management system in selected Alaskan sites. Secure electronic health care data are shared among participating Alaskan Native villages, their regional health care hub, and third-party care facilities in Anchorage.

The Alaskan Native Health Board participates as a subcontractor to the University of Alaska. Four regional hospitals and 20 villages participate in the project, along with the IHS s Alaska Native Medical Center as the tertiary care facility. The four regional hospitals and their associated villages are (1) Yukon-Kuskokwim Delta Regional Hospital, Bethel Villages of Chevak, Marshall, Hooper Bay, Kotlik, and St. Mary s; (2) North Sound Regional Hospital, Nome Villages of Elim, Dionmede, Gambell, Shishmaref, and Stebbins; (3) Manillaq Health Center, Kotzebue Villages of Kiana, Ambler, Noatak, Selawik, and Noorvik; and (4) Kanakanak Hospital Villages of Port Heiden, New Stuyahok, Koliganek, Levelok, and Manokotak. An alternate site is the Alutiq Enwia Clinic and the Villages of Larsen Bay, Akhiok, Port Lions, Ouzinki, and Old Harbor.

National Library of Medicine contract award of $1.98 million Performance period is October 1, 1996, to September 29, 1999

Frederick W. Pearce, Ph.D., University of Alaska at Anchorage, Applied Sciences Laboratory, 3211 Providence Drive, Anchorage, AK 99508 Phone 907-786-4185 Internet website <http://www.telemedicine.alaska.edu/nlm>

Robert Rawls, Alaskan Native Health Board, 4201 Tudor Center Drive, Suite 105, Anchorage, AK 99508 Phone 907-562-6006

ARIZONA

NAVAJO AREA INDIAN HEALTH SERVICE Three years ago, the Navajo Area Office undertook a project to improve triage of orthopedic cases at six outpatient health centers lacking full-time radiologists. Initial transmission occurred over undedicated copper phone lines now being replaced with high-capacity T-1 lines. The decision to upgrade telecommunications capacity was made by the local IHS office. That decision shares the Navajo Nation vision of developing its own telecommunications system to support health, education, and other government service delivery; economic development; and a community information network.

Navajo Area Indian Health Service internal budget contribution unavailable.

Douglas Peter, Chief Medical Officer, Navajo Area Office, Box 9020, Window Rock, AZ 96515-9020 Phone 520-871-5874

UNIVERSITY OF ARIZONA, TUCSON The university will develop a plan for the integration of Arizona s three enterprise communities into the state-funded Arizona Telemedicine Program. The enterprise communities are San Luis, Douglas, and Nogales. These communities, located in the counties of Yuma, Santa Cruz, and Cochise along the Arizona/Mexico border, have nearly doubled in population over the last 20 years. The university will demonstrate telemedicine applications at local community meetings and gather input for a strategic plan. The plan, including a proposal for Internet access, will be presented to the state for integration into the statewide master plan. Eventual services will include Internet access and consideration for teleconsultations, patient vital sign acquisition, static image acquisition, and live digital video conferencing components.

National Telecommunications and Information Administration grant of $49,999 towards a total project cost of $100,029 FY 1996

Allison Hughes, Rural Health Office, Family and Community Medicine, University of Arizona at Tucson, 2501 East Elm Street, Tucson, AZ 85716 Phone 520-626-7946

Other federal funds link the Maricopa Community Health Center in Nogales to the University of Arizona College of Medicine. This connection gives Nogales access to the college s 2,709 specialists and sub-specialists. The system is used for teleconsultations and emergency medical situations.

Rural Utilities Service grant of $141,150 FY 1996

Dr. Ronald Weinstein, Health Science Center, University of Arizona at Tucson, 15-1 North Campbell, P.O. Box 5043, Tucson, AZ 85724-5043 Phone 520-626-6097

Another grant funds interactive (video conferencing) and store-and-forward (computer-based) technologies to connect seven sites under the Arizona Telemedicine Program. The federal grant focuses on three sites a community health center, a hospital with an adjacent clinic, and a regional medical center with an extended long-term care facility. The network began with one site in May 1997. The other six facilities became operational in November 1997. The Arizona Telemedicine Program uses interactive video conferencing with peripherals such as electronic stethoscope, dermascope, ENT scope, digital camera, and store-and-forward (computer-based) technologies to provide clinical, administrative, and educational services to the sites. The Arizona Telemedicine Program will provide the following clinical telemedicine services: dermatology, pediatrics, cardiology, poison and drug information, neurology, psychiatry, endocrinology, oncology, emergency medicine, ophthalmology, infectious disease treatments, toxicology, and rheumatology. The system will also be used for medical student supervision/preceptorship, distance learning, and administrative meetings.

Office of Rural Health Policy/OAT three-year telemedicine grant. FY 1997 - $246,517

Sandy Beinar, The Arizona Board of Regents, The University of Arizona, 888 North Euclid, Suite 510, P.O. Box 3308, Tucson, AZ 85722-3308 Phone 520-626-2493, Fax 520-676-1027, E-mail <Beinars@u.arizona.edu>

WHITE MOUNTAIN APACHE TRIBE The White Mountain Apache Tribe is located on the Fort Apache Reservation, which lies in portions of Navajo, Apache, and other counties in east central Arizona. The tribal project develops an Internet community-wide network to assist in economic development, lifelong learning, delivery of health services, and communications. The network, comprised of ground and wireless connections, connects the tribal business office, remote local tribal organizations, the school system, and the Indian Health Hospital. The project focuses on tribal operations at Hon-Dash, McNary, Cibecue, Sunrise Ski Park Resort, and the scattered schools of the Whiteriver Unified School District.

National Telecommunications and Information Administration grant of $249,459 towards a total project cost of $556,299 FY 1996

Joe Waters, White Mountain Apache Tribe, P.O. Box 700, Whiteriver, AZ 85941 Phone 520-338-4346

ARKANSAS

ST. EDWARD MERCY MEDICAL CENTER A medical and educational system links the St. Edwards Mercy Medical Center with three hospitals in western Arkansas. Available services include medical training, teleradiology/EKG interpretation services, and training courses for medical professionals from West Arkansas Community College.

Rural Utilities Service grant of $115,000 FY 1995

Al Genna, St. Edwards Mercy Medical Center, 7301 Rogers Avenue, Fort Smith, AR 72917 Phone 501-484-6000

UNIVERSITY OF ARKANSAS FOR MEDICAL SCIENCES The University of Arkansas for Medical Sciences interactive video network uses interactive video conferencing to connect 33 sites (18 rural hospitals, eight Area Health Education Centers [AHECs], three community health centers, one certified rural health clinic, and three sites across campus and at the university hospital). The network has been operational since 1993, with the first rural hospitals joining in the summer of 1994. It uses interactive video conferencing to provide clinical and educational services to health professionals, hospital staffs, health care students, patients, and consumers. The network will provide consultations for the following clinical services: emergency stabilization, cardiology, general surgery, dermatology, radiology, obstetrics/gynecology, urology, orthopedics, neurology, otorhinolaryngology, ophthalmology, physical rehabilitation medicine, psychiatry, psychology, pediatrics, dentistry and dental hygiene, pharmacy, clinical nursing specialties, respiratory therapy, occupational therapy, physical therapy, speech pathology, audiology, nutrition and dietetics, and social work. The system will also be used for continuing education programs for health professionals, training of nursing and allied health students, statewide professional meetings, administrative meetings, and consumer health education programs.

Rural Utilities Service grant of $490,000 FY 1995

Office of Rural Health Policy/OAT three-year telemedicine grant. FY 1997 - $297,505

Ann Vailey Bynum, Ed.D., University of Arkansas for Medical Sciences, 1123 South University Avenue, Suite 400, Little Rock, AR 72204 Phone 501-686-2595, Fax 501-686-2585, E-mail <bynumcarola@exchange.uams.edu>

CALIFORNIA

INSILICO InSilico (formerly World Information Networks Corporation) is developing software for secure Internet access to a database of 3-D peripheral retinal images to augment diagnosis of peripheral retinal disease and to synthesize a series of smaller overlapping images taken from fundus cameras into one highly detailed image. Phase II of the project will develop methods for automated comparisons of images contained in a virtual reading center database. Comparison data may be useful in AIDS treatment because they allow more detailed analysis of changes in peripheral retinal lesions over time and in response to therapy and other interventions. InSilico s collaborative partners are the San Diego Laboratory for Mathematics and Statistics and Dr. William Freeman, who will supply the eye database.

National Library of Medicine contract amount of $99,577 FY 1995

Hans Sieburg, M.D., Ph.D., InSilico, P.O. Box 85608 Building 14, San Diego, CA 92186-5608 Phone 619-455-3700

LELAND STANFORD JUNIOR UNIVERSITY This project is a collaboration among three medical information research groups Leland Stanford Junior University, Columbia University, and Brigham and Women s Hospital to build Internet-accessible shared systems that support computerized patient records, clinical research protocols, medical vocabulary servers, teleconferencing, and health professions education.

National Library of Medicine contract award of $933,801. The other two university partners received $672,000. Performance period is September 30, 1996, to December 31, 1999.

Edward Shortliffe, M.D., Leland Stanford Junior University, SMI MSOBX215, Stanford, CA 94035-5479 Phone 515-725-3385

MERCY MEDICAL CENTER The Mercy Medical Center, representing the Superior California Health Library Consortium, manages a grant to provide medical Internet connections to northern California hospitals. Two Indian sites are included the Redding Rancheria and the Pit River Health Clinic. The grant pays for hardware and telecommunications costs for the National Library of Medicine s (NLM s) Grateful Med online database service. Participants have agreed in advance to pick up telecommunications costs after one year.

National Library of Medicine contributed $106,935 towards the project FY 1996

Billie S. White, Mercy Medical Center, Physicians Education Services, P.O. Box 496009, Redding, CA 96049-6009 Phone 916-225-6000

NORTHERN CALIFORNIA MULTI-SITE COLLEGE PROJECT The Butte Glen Community College District, in association with Shasta College, Siskiyous College, and Lassen College, is coordinating a project to purchase equipment through advanced telecommunication and computer networks to facilitate distance learning and telemedicine projects that promote associated educational and medical benefits. Predominate use is educational, but medical applications will constitute a significant smaller share. The four colleges offer instructional courses and access state, national, or global institutions for students in remote areas. The project connects eight counties and 32 end-use sites, which include public high schools, hospitals, community health centers, and public libraries. Doctors and medical facilities are able to reduce patient and staff travel time and cost by accessing information and conducting teleconsultations with outside experts.

Rural Utilities Service grant of $336,124 FY 1996

Stephen Stone, Butte Glen Community College, 3536 Butte Campus Drive, Oroville, CA 95965 Phone 916-895-2570

SCIENCE APPLICATION INTERNATIONAL CORPORATION (SAIC) SAIC and the University of California at San Diego are cooperatively developing a project to enable patients, health care providers, and medical researchers to access clinical information over the Internet without breeches of confidentiality. The project uses everyday world wide web technology to support information research and retrieval, and state-of-the-art security technology to ensure patient privacy and the integrity of patient information. The project is unique because it gives patients more control over and access to their medical records while preserving the confidentiality of that information.

National Library of Medicine contract amount unavailable. Performance period is September 30, 1996, to September 29, 1999.

Dixie Baker, M.D., Science Application International Corporation, 222 North Sepulveda, Suite 1740, El Segundo, CA 90245 Phone 310-615-0305, ext. 13, Internet website <http://medicine.ucsd.edu/pcasso/>

SOUTHERN TRINITY HEALTH SERVICES This project brings together four health-related agencies to develop a more coordinated, comprehensive network of direct services and to extend services, including dental, mental health, and social services, to underserved areas. Utilizing the expertise of consortium members, local volunteers are trained to provide emergency medical services, social services, and crisis intervention. These volunteer services will be enhanced by a desktop computer video conferencing system for consultations, teleconferencing between consortium members, and distance education. Consortium members include the grantee, North Coast Emergency Medical Services, the Human Resource Network, and the local Healthy Start Collaborative. Native Americans comprise about 10 percent of the service area population; however, the level of their direct participation, if any, in the project is unavailable.

Office of Rural Health Policy/OAT three-year outreach grant total of $454,770 FYs 1994 1996

Ann Webster, Southern Trinity Health Services, P.O. Box 4, Mad River, CA 95552 Phone 707-574-6616

UNIVERSITY OF CALIFORNIA, DAVIS This project will add three rural hospitals and their affiliated rural health clinics to the Northern California Telemedicine Network, which currently links an academic tertiary care center to six primary care clinics and a county jail clinic. The network has been developing since 1992, when a telefetal monitoring connection was established between the University of California Davis Medical Center and Colusa Community Hospital. The network uses interactive video conferencing for clinical, educational, and administrative services, and remote monitoring to assist in the evaluation and stabilization of acute patients. The clinical services provided over the network include dermatology, obstetrics, otolaryngology, palliative care, psychiatry, nutrition, and orthopedics. Endocrinology, neurosurgery, oncology, and urology are scheduled to come on line in 1998. The system is also used for grand rounds, distance medical education, administrative conferencing, and patient education.

Office of Rural Health Policy/OAT three-year telemedicine grant. FY 1997 - $337,541

Tom Nesbitt, M.D., Regents of the University of California at Davis, 410 Mrak Hall, Davis, CA 95616 Phone 916-734-5675, Fax 916-734-1366, E-mail <thomas.nesbitt@ucdmc.ucdavis.edu>

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO The university has two NLM research contracts. The first project designs and implements a network serving four hospitals, one medical school, and one clinic in the San Francisco Bay area for the transmission and management of neuro-images and associated medical data. The University of California at San Francisco Hospital and Medical School serves as the neuro-imaging center for other participating hospitals Mt. Zion Hospital, San Francisco Veterans Administration Hospital and Medical Center, San Francisco General Hospital, and San Francisco Magnetic Resonance Imaging Center.

National Library of Medicine estimated contract amount of $1,542,874 Performance period is April 1, 1994, to March 31, 1997.

Ronald Arensen, M.D., Department of Radiology, University of California at San Francisco, 505 Parnassus Street, San Francisco, CA 94143-0628 Phone 415-476-5137

The second project includes the same facility participants as the first project. This project designs, implements, and evaluates the impact of high-performance tele-imaging networks for the transmission, management, and remote learning of brain and breast images and associated medical data. This imaging infrastructure supports five modes of distance operation: diagnosis, consultation, management, research, and education. The project tests whether a high-performance tele-imaging information infrastructure will improve health care delivery for near imaging and breast imaging and increase effectiveness of both imaging specialists and hospital capacity.

National Library of Medicine contract amount unavailable. Performance period is September 30, 1996, to December 31, 1999.

H.K. Huang, D.Sc., University of California at San Francisco, Department of Radiology, 530 Parnassus Avenue, Room CL-158, San Francisco, CA 94143-0628 Phone 415-476-6044, Internet website <http://www.lri.ucsf.edu>

UNIVERSITY OF SOUTHERN CALIFORNIA, ADVANCED BIOTECHNICAL CONSORTIUM The university s medical faculty provides health care to underserved inner-city elderly and Catalina Island residents through a state-of-the-art telemedicine system. Patients are cared for in their local area by means of a PacBell network transmission of University of Southern California emergency medicine support instead of having to travel by helicopter or water transport to receive care.

National Library of Medicine contract amount unknown. Performance period is September 30, 1996, to September 29, 1999.

F.W. George III, M.D., University of Southern California, Advanced Biotechnical Consortium, 1537 Norfolk Street, DEI-5103, Los Angeles, CA 90033 Phone 213-342-3671, Internet website <http://www-abc.hsc.usc.edu>

VISIBLE LIGHT, INC. Visible Light, Inc., is the legal name for a nonprofit organization called the Regional Alliance for Information Networking (RAIN). RAIN develops public Internet and telecomputer services with a focus on distance learning and telemedicine applications. This project links three rural communities across a tri-county region and delivers innovative neighborhood-level, public library, classroom, and medical clinic network development and training assistance. The grant will provide an interactive television and computer network to improve lifelong learning opportunities for all ages, which will be significantly enhanced by remote access to respected scientists, educators, and health professionals. Medical services to the public and the level of community health and wellness will improve through expanded sharing of telemedicine diagnostic and referral information between doctors. The service area includes San Luis Obispo, Santa Barbara, and Ventura.

Rural Utilities Service grant of $210,200 FY 1997

Timothy Tyndall, Visible Light Inc., P.O. Box 325, Buelton, CA 93427 Phone 805-686-1647, Fax 805-686-1149, E-mail <rain@rain.org>

WESTERN CONSORTIUM FOR PUBLIC HEALTH The Western Consortium for Public Health and a variety of public and private partners demonstrate and evaluate the benefits of video conferencing and remote pen-based data entry and information gathering via wireless technology in a rural public health environment. This project is implemented in 11 rural counties, which rely on the California Department of Health for basic services because of extreme geographic isolation and scarce economic resources. Phase I creates a network that links each county health department to the California Department of Health s main office in Sacramento for video conferencing and data communications. Phase II uses Yolo County as a pilot project. Public health workers use pen-based computers to capture data at the point of service delivery to reduce data entry and to access databases and receive program alerts from the central office. Lawrence Livermore National Laboratory and Decade Software Corporate will develop the secure pen-based computer applications. VTEL will contribute video conferencing equipment, and Pacific Bell the telecommunications infrastructure. Evaluative measures include

staff productivity, time and motion studies, cost data, and staff effectiveness. Affected counties include Alpine, Amador, Calaveras, Del Norte, Glenn, Lassen, Mariposa, Modoc, Mono, San Benito, Sierra, and Yolo.

National Telecommunications and Information Administration grant of $668,286 towards a total project cost of $1,580,724 FY 1995

Jane McCann Walsh, Western Consortium for Public Health, 2001 Addison Street, Suite 200, Berkeley CA 94704 Phone 510-644-9300

COLORADO

CENTURA HEALTH Using interactive video conferencing, The Colorado Telehealth Network connects 21 sites (9 rural hospitals, 3 rural clinics, 4 urban tertiary hospitals, 4 urban primary/secondary hospitals, and 7 support center). The network, which began with four sites in 1995, uses PictureTel Concord 4500 video conferencing workstations. It will provide clinical telemedicine services in cardiology, pulmonology, gastroenterology, orthopedics, trauma, dermatology, discharge planning, wound care, mental health, nutritional counseling, surgery follow-up, and geriatric services. The system is used for distance education, administrative meetings, and tumor board conferences. The system will be made available for community use to support economic growth and development.

Office of Rural Health Policy/OAT three-year telemedicine grant. FY 1997 - $307,848

Vera Kloepfer, Centura Health, 5570 DTC Parkway, Englewood, CO 80111 Phone 719-485-3395, Fax 719-485-3500, E-mail <vkloe8@rmi.net>

CONEJOS COUNTY HOSPITAL This project links two rural hospitals in mountainous Conejos and Huerfano Counties for sharing radiological and medical information. The network will use existing copper telephone lines and modems to transport medical images and data at speeds of 19,200 bits per second. Grant funds are used to acquire personal computer technology and other digital medical equipment.

Rural Utilities Service grant of $68,000 FY 1994

Administrator, Conejos County Hospital, 19021 Highway 85, La Jara, CO 81140 Phone 719-274-5121

HIGH PLAINS RURAL HEALTH NETWORK The High Plains Rural Health Network provides interactive video conferencing to deliver specialty health care and continuing medical education to several medically underserved areas in Colorado, Nebraska, and Kansas. The network operates three hub sites Denver, Fort Collins, and Sterling serving 27 sites by providing continuing education for physicians, nurses, and other health care professionals. The network project is jointly funded.

Office of Rural Health Policy/OAT three-year telemedicine grant total of $1,510,727 FYs 1994 1996

Rural Utilities Service grant of $227,291 FY 1995

Peter Caplan, High Plains Rural Health Network, 218 East Kiowa Avenue, Fort Morgan, CO 80701 Phone 970-867-6195

ROCKY MOUNTAIN ADVENTIST HEALTHCARE (PORTERCARE) This project links hospitals in northwest and south central Colorado to provide specialty medical and mental health consultative services to rural residents; continuing medical education for physicians, nurses, and other health care professionals; continuing nonmedical education; and community development services.

Rural Utilities Service grant of $300,000 FY 1995

Judie Foster, Portercare, 2525 South Downing Street, Denver, CO 80210 Phone 303-778-2519

DISTRICT OF COLUMBIA

ASSOCIATION OF OCCUPATIONAL AND ENVIRONMENTAL CLINICS The Association of Occupational and Environmental Clinics, along with Duke University, shares expertise with health care providers by means of an Internet-based or telephone-based service. Health care providers send questions about patients illnesses to an Internet mailing list and receive evaluations from expert participants. This service also helps in the exchange of information, documents, and computer software.

National Telecommunications and Information Administration grant of $21,742 towards a total project cost of $43,712 FY 1995

Kathryn Kirkland, Association of Occupational and Environmental Clinics, 1010 Vermont Avenue, NW, Washington, DC 20005 Phone 202-347-4976

GEORGETOWN UNIVERSITY MEDICAL CENTER Researchers test the notion that electronic interactive communication among physicians and patients improves the quality of patient care and lowers cost for patients, physicians, and providers. The project relies on the existing and extensive Georgetown University Medical Center radiological imaging nodes and hospital information systems. These systems connect nephrologists homes with remote outpatient kidney dialysis clinics and the medical center.

National Library of Medicine contract amount unavailable Performance period is September 30, 1996, to September 29, 1999.

Seong Ki Mun, Ph.D., Georgetown University Medical Center, 37th and O Streets NW, Washington, DC 20057 Phone 202-784-3483, Internet website <http://www.imac.georgetown.edu/telemed/phoenix.htm>

GEORGIA

CENTER FOR HEALTH INFORMATION The Georgia Division of Public Health extends the Georgia Information Network for Public Officials to serve at least 80 of the 196 community-based public health clinics operated by the county health departments. The network is connected to an existing network serving 56 hospitals and the Public Health and Preventive Medicine Residency Program at the Morehouse School of Medicine. Private pediatricians and hospitals receive dial-up access to county health department immunization records. The network also provides preventive health information to low-income and intercity residents.

National Telecommunications and Information Administration grant of $660,000. Total project cost of $1,992,528 FY 1994

Karen Chapman, Center for Health Information, Georgia Division of Public Health, 2 Peachtree Street 3rd Annex, Room 3-560, Atlanta, GA 30303-3168 Phone 404-657-6300

MEDICAL COLLEGE OF GEORGIA The Medical College of Georgia evaluates the effects of Georgia s extensive state-funded telemedicine system on accessibility, quality, and cost of health care. Researchers at the University of Michigan work with the Medical College of Georgia to evaluate six telemedicine hubs and 20 spoke sites. About half of Georgia s telemedicine network sites will be evaluated.

Health Care Financing Administration estimated grant of $870,029 FY 1995 1996

Kevin Grigby, Telemedicine Center, EA100, Medical College of Georgia, Augusta, GA 30912 Phone 706-721-6616

HAWAII

HAWAII DEPARTMENT OF HEALTH This state project uses telemedicine technology to improve the delivery of mental health services. The project determines the most efficient approach to delivering telemedicine in Hawaii, focusing on providing telemedicine services to Island residents with mental health disorders. Participants in the Hawaii telemedicine planning project include the Departments of Health and Business, Economic Development, and Tourism; University of Hawaii School of Medicine, Tripler Army Medical Center; the Chamber of Commerce; private telecommunications corporations; and community health organizations. Planning challenges include (1) the islands isolation from the mainland and social-cultural differences, which isolate rural communities from urban centers; (2) the lack of health care professionals, particularly in the area of mental health; and (3) the shortage of bilingual or

culturally competent practitioners to serve multicultural populations. The planning project attempts to improve access to mental health services through the use of two-way interactive video technology.

National Telecommunications and Information Administration grant of $51,985 towards a total project cost of $103,970 FY 1996

Jeanette Takamura, Hawaii State Department of Health, 1250 Punchbowl Street, Honolulu, HI 96813 Phone 808-586-4412

KAUAI VETERANS MEMORIAL HOSPITAL This small rural hospital shares problems in common with those like it: limited financial and medical resources, lack of specialty consultations and continuing education for medical personnel, inability to retain physicians, and isolation. Grant funds will be used to purchase a telemedicine video conferencing network for linking to other facilities to reduce air transport, increase timeliness and quality of medical attention, and provide continuing education services. Service area includes Waimea, Waimea District, Kauai County, and the Island of Kauai.

Rural Utilities grant of $224,759 FY 1997

Orianna Skomoroch, Kauai Veterans Memorial Hospital, P.O. Box 337, Waimea, HI 96796 Phone 808-338-9422, Fax 808-338-9420

IDAHO

BOISE STATE UNIVERSITY, COLLEGE OF HEALTH SCIENCE The Boise State University Center of Health Policy plans for a CHIN for the Magic Valley region of southern Idaho and northern Nevada. CHIN integrates and automates the clinical functions of six hospitals, 200 physicians in their offices, public health agencies, and other ancillary health care professionals. Among the services envisioned for the CHIN are electronic capture of patient encounter information, integration of the clinical information systems of all providers, expert system software to provide alerts and reminders to care providers, evaluation protocols to measure outcomes of various community and personal health initiatives, and incorporation of telemedicine technologies to serve remote, underserved areas.

National Telecommunications and Information Administration grant of $136,284 towards a total project cost of $272,568 FY 1994

Dr. James Tayler, Boise State University, College of Health Science, 1910 University Drive, Boise, ID 83725 Phone 208-385-1678

NORTH IDAHO RURAL HEALTH CONSORTIUM Using interactive video technology, the North Idaho Rural Health Consortium links five rural health care centers and a community college. The new service transmits digitized X-rays, patient information, and laboratory tests; provides Internet access; and offers nursing and medical classes.

Rural Utilities Service grant of $345,412 FY 1995

Tom Hauer, Kootenai Medical Center, Member, North Idaho Rural Health Consortium, 700 Ironwood Drive, Suite 220, Coeur d Alene, ID 83814 Phone 208-666-1441

The consortium received another grant for a project called the North Idaho School of Nursing Services Cooperative. This project will improve health services and health education for school children and adolescents in an isolated five-county area in Idaho. The network will use distance education technologies to provide disease prevention and health promotion education to more than 29,600 school-age children, including American Indian children from the Kootenai and Coeur d Alene Tribes. The network will develop age-appropriate health promotion curricula to be delivered, in part, through interactive video and broad bandwidth telecommunications technologies. The project will also provide improved direct student health services and care plan management of medically fragile and at-risk children. The network is comprised of a five-member rural hospital consortium, the Panhandle Health District, North Idaho Head Start, North Idaho College, and the public school districts of the five northern counties this project serves.

Office of Rural Health Policy/OAT three-year outreach grant.
FY 1997 - $199,186

Gene Tomt or Mary Henriksen, North Idaho Rural Health Consortium, North Idaho School Nursing Services Cooperative, 700 Ironwood Drive, Suite 220, Coeur D Alene, ID 83814 Phone 208-253-1441, Fax 208-265-4620

ILLINOIS

CARLE FOUNDATION/CARLE RURAL TELEMEDICINE NETWORK Using interactive video conferencing, the Carle Rural Telemedicine Network project connects seven sites (four hospitals, two primary care rural health clinics, and one nursing home/seniors service center). The Carle Foundation has operated an interactive telemedicine program since November 1993. The network uses desktop and VTEL interactive video conferencing to provide clinical and emergency consultations, physician and staff educational services, and community education. The Home Assisted Nursing Care (HANC) units will be used to provide home health services. The Carle network will provide clinical telemedicine services in emergency medicine, trauma, cardiology, pediatrics, pediatric neurology, attention deficit disorder evaluation, pre-and post-cardiovascular surgery, anesthesiology, and home health. Educational services such as continuing medical education (CME), cardiology, trauma grand rounds, and emergency medical services (EMS) education are also offered.

Office of Rural Health Policy/OAT three-year telemedicine grant.
FY 1997 - $289,314

Donna Acklin, Carle Foundation, 611 West Park Street, Urbana, IL 61801 Phone 217-383-3206, Fax 217-383-3018, E-mail <donna.acklin@carle.com>

MASON HOSPITAL DISTRICT This grant funds teleradiology equipment to be operated from the Mason Hospital, an end user with a connecting link to a hub site in Canton, Illinois. This use of digital teleradiology will permit physicians to access the professional imagery services of radiology, CAT scan, nuclear medicine, and ultrasound transmitted over the existing telephone network. Prompt and accurate image interpretation has a significant impact on the diagnosis of urgent and life-threatening situations in spite of the time and logistical difficulties caused by a bridge closure that triples travel time between the two sites. Service area is Mason County.

Rural Utilities Service grant of $34,865, with a $89,175 loan FY 1997

Harry Wolin, Mason Hospital District, 520 East Franklin, P.O. Box 530, Havana, IL 62644 Phone 309-543-8575, Fax 309-543-8523

MERCER COUNTY HOSPITAL This project sets up a teleradiology network between four hospitals in Mercer and Livingston Counties to exchange scans, X-rays, and other medical information. Each hospital is equipped with laser digitizing film scanners and sending and receiving workstations. Transmission occurs over regular telephone lines.

Rural Utilities Service grant of $100,000 FY 1994

Bruce Peterson, Mercer County Hospital, 409 Northwest 9th Avenue, Aledo, IL 61231 Phone 309-582-5301

NORTHWEST MEMORIAL HOSPITAL This project, called NetReach, equips health care teams with computer systems to assist outpatient care. To understand the needs of clinicians, observational studies were made at seven diverse outpatient clinics, including primary care, specialty care, faculty group practice, independent group practice, and urban care. The project evaluates the impact of information technology on the clinical and operational performance of physicians and on patient and provider satisfaction.

National Library of Medicine estimated contract amount of $2,334,952. Performance period is October 1, 1996, to June 30, 1998. Extension of prior award.

Paul Tang, M.D., Northwest Memorial Hospital, Information Services, 259 East Erie, Suite 600, Chicago, IL 60611 Phone 312-908-4034

INDIANA

INDIANA UNIVERSITY REGENSTRIEF INSTITUTE One Regenstrief Institute project extends the services of the Indianapolis network to the Indiana State Public Health Department and a large number of clinical laboratories. Service expansion provides clinicians better immunization data and enables electronic reporting of communicable diseases. This project also expands the network s scope to include hospital emergency rooms, clinics, HMOs, homeless care sites, and pharmacies. This new service accesses patient records in emergency rooms, medical library resources at numerous care sites, and a collection of prescription information from a large chain of community pharmacies.

Another Regenstrief Institute project creates a shared clinical data repository called the Indianapolis Network for Patient Care to increase the efficiency and quality of emergency room and primary care. The repository stores encounter records, hospital abstracts, clinical laboratory data, prescription data, and other data for use by emergency departments and primary care providers in the Indianapolis area. The repository encompasses 90 percent of the city s hospital emergency room care and two managed care systems, as well as a major share of the laboratory and hospital encounter data. This project may result in a workable model for access and confidentiality of large-scale shared community clinical data.

National Library of Medicine estimated contract amount of $2,398,160. Performance period for the first project is October 1, 1996, to December 31, 2000; for the second project, it is October 1, 1997, to March 31, 1999. The second project is an extension of a prior award.

Clement J. McDonald, M.D., Indiana University Regenstrief Institute, Department of Medicine, 1001 West 10th Street, Fifth Floor, Indianapolis, IN 46202-2859 Phone 317-630-7400

MIDWEST CENTER FOR RURAL HEALTH, UNION HOSPITAL The center operates as a nonprofit corporation of Union Hospital. The project implements a computerized medical records system with integrated telemedicine capabilities among three clinical sites Clay Center for Family Medicine (Clay County), Worthington Family Medicine (Greene County), and the Union Hospital (Vigo County). The grant/loan package establishes telecommunications infrastructure for system development. The service area includes Clay, Greene, and Vigo Counties.

Rural Utilities Service grant of $62,027, with a $200,000 loan FY 1997

Frank Shelton, Midwest Center for Rural Health, Union Hospital, 1606 North 7th, Terre Haute, IN 47804 Phone 812-238-7479, Fax 812-238-7604

IOWA

DECATUR COUNTY HOSPITAL This project helps the Decatur County Hospital improve services to low-income residents and strengthen its economic base by offering more services. An Internet-based network provides general medical service, telepsychiatry, and distance learning.

Rural Utilities Service grant of $245,394 FY 1994

Sue Utrey, Decatur County Hospital, 405 Church Street Northwest, Leon, IA 50144 Phone 515-446-4871

IOWA METHODIST MEDICAL CENTER The Iowa Methodist health system project evaluates the effectiveness of linking hospitals to a state-funded, statewide fiber optic network that consists of one hub site and two spoke sites of Trinity Regional Hospital (Fort Dodge) and Greene County Medical Center (Jefferson). Each site is equipped with live video and store-and-

forward teleconsultations in radiology, cardiology, and pathology. The network will be used for information system data and medical education.

Health Care Financing Administration grant of $1,079,442 FYs 1993-1994

Ginny Wagner, Iowa Methodist Medical Center, 1200 Pleasant Street, Des Moines, IA 50309 Phone 515-241-5998

MIDWEST RURAL TELEMEDICINE CONSORTIUM (MERCY FOUNDATION) The Midwest Rural Telemedicine Consortium (MTRC) organizational hubs in Des Moines (Mercy Hospital Medical Center) and Mason City (North Iowa Mercy Health Center) were established in 1993 to explore how advanced health care and telecommunications technologies could be used for the mutual benefit of its member organizations and the communities they serve. The MRTC uses interactive video and store-and-forward computer-based technologies to provide clinical and educational services to rural constituencies throughout Iowa. Health Care Financing Administration (HCFA) grant funding enabled implementation of telemedicine products and services in 12 hospital organizations during the 1995 1996 time frame. Telemedicine facilities were installed at three additional locations through funding from the state of Iowa (Iowa Telecommunications and Technology Commission) and institutional cost-sharing. ORHP/OAT funding is being used to extend MRTC s presence to 10 additional hospitals, as well as to three clinics and three long-term care facilities. Matching funds have been used to install three additional telemedicine systems in Mason City and Des Moines. This project is a component of ORHP/OAT s national evaluation of telemedicine.

Health Care Financing Administration three-year grant of $4,237,262 FYs 1994-1997

Office of Rural Health Policy one-year grant of $1,964,800 FY 1996

Jim Reid, Project Director, Mercy Hospital Health Center, 400 University Avenue, Des Moines, IA 50314 Phone 515-643-8750, Fax 515-248-8928, E-mail <jreid@mercydesmoines.org>

NORTHWESTERN COLLEGE The system provides 37,000 rural residents, including students, patients, and other residents, with access to the Iowa Communications Network for educational and medical services. The sheriff s department uses the system to conduct distance parole hearings.

Rural Utilities Service grant of $350,000 FY 1995

Wayne Kooiker, Business Officer, Northwestern College, 101 7th Street Southwest, Orange City, IA Phone 712-737-7121

UNIVERSITY OF IOWA, NATIONAL LABORATORY FOR THE STUDY OF RURAL TELEMEDICINE This project represents add-on research for a research contract sponsored by NLM. Total funding of $8.9 million includes a recent $1.4 million additional research component. Prior funding developed the Iowa National Laboratory and linked 10 Iowa hospitals with the laboratory s telemedicine research/development network and educational resources. The add-on research includes clinical consultations and the use of specialized

databases for health care. Project components measure the effectiveness of video consultations for patients with special health care needs, including children with disabilities or heart conditions and people with mental illness. The project s special database software and video conferencing elements support community hospital emergency room staff in caring for heart attack and stroke patients. The project also provides an innovative means of delivering health information into the homes of people with diabetes. Diabetics receive an easy-to-use device that attaches to their television sets, giving them access to online health information which encourages patients to manage their disease more effectively.

National Library of Medicine multi-year research contract worth an estimated $8.9 million Performance period is September 30, 1996, to September 29, 1999.

Michael Kinzele, M.D., Iowa s National Laboratory for the Study of Rural Telemedicine, Telemedicine Resource Center, 1204 MEB, Iowa City, IA 52242 Phone 319-353-5621, Internet website <http://vh.radiology.uiowa.edu>, <http://everest.radiology.uiowa.edu>, <http://www.pmeb.uiowa.edu/ticats.htm>

KANSAS

HAYS MEDICAL CENTER The center s telemedicine project funds a cost-effective monitoring system for home health care for the elderly and disabled. Specifically, this project addresses the problems of access to home health care, premature institutionalization, and declining physical and mental health conditions in elderly patients. The project links medical centers and hospitals in Rawlins, Wyandotte, and Ellis Counties, Kansas; and in Jackson County, Missouri, with 100 home health patients. The program interactively monitors a patient s general health, medication, diabetic condition, blood pressure, diet, hygiene, and mental health status. Each patient is linked from his or her home with a registered nurse and periodically monitored through the system by a physician. Evaluation software tracks patient programs and status. Along with improving patient health care, this system can provide enormous financial savings over traditional care. Hays Medical Center project partners include Kansas University Medical Center, Kansas City Veterans Administration Medical Center, and Rawlins County Hospital.

National Telecommunications and Information Administration grant of $310,699 towards a total project cost of $909,459 FY 1995

Stephen Ronstrom, Office of Rural Health, Hays Medical Center, 2220 Canterbury Drive, Hays, KS 67601 Phone 785-623-5104, Internet website <http://www.kumc.edu/telemed/outreach/telemed.htm>

HORTON HEALTH FOUNDATION The Horton Health Foundation serves a federally designated health professional shortage area, as well as a medically underserved area. The grant funds a telecommunications and Internet/intranet connection to the city of Horton, Brown County, from the University of Kansas Medical Center and a backup tertiary facility, St. Francis Medical Center. The service creates an integrated system for providing emergency room backup, specialty consultations, and information resources for health care providers and community residents. The service area is Brown County, Kansas.

Rural Utilities Service grant of $146,961 FY 1997

Dale White, Horton Health Foundation, 240 West 18th, Horton, KS 66439 Phone 913-486-2642, Fax 913-486-3620

UNIVERSITY OF KANSAS MEDICAL CENTER This medical center project creates a telemedicine link with hospitals in Garden City, Oakley, and Phillipsburg, with a regional center in Goodland and with other remote locations in central and western Kansas to accelerate diagnosis and treatment of patients.

Rural Utilities Service grant of $200,000 FY 1994

Dr. Jane Murray, Department of Family Medicine, University of Kansas Medical Center, 3901 Rainbow Boulevard, Kansas City, KS 66160-7370 Phone 913-588-1900

WESTERN KANSAS COMMUNITY SERVICES CONSORTIUM The educational system connects 10 sites, including 8 post-secondary schools and Kansas State University. Offered curriculum includes vocational training, business administration, the arts, and continuing education for professionals in education and medicine. The system also provides medical services through partnerships with colleges and a regional medical center.

Rural Utilities Service grant of $300,000 FY 1995

Joyce Hartman, Western Kansas Community Services Consortium, 1007 West 8th Street Pratt, KS 67124 Phone 316-672-2566

KENTUCKY

APPALACHIAN REGIONAL HEALTH CARE, INC. This project expands an existing telecommunications network of video conferencing and telemedicine peripherals operated by Appalachian Regional Healthcare, Inc. The project compensates for a lack of adequate medical resources and reduces patient travel time for this low-income area. The service area includes Letcher, Floyd, and Raleigh Counties in Kentucky, and Summers, Logan, and Wise Counties in West Virginia.

Rural Utilities Service grant of $190,539, with a $103,200 loan FY 1997

Stephanie L. Short, Appalachian Regional Health Care, Inc., P.O. Box 8086, Lexington, KY 40533 Phone 606-226-2568, Fax 606-226-2439

FRONTIER SCHOOL OF MIDWIFERY AND FAMILY NURSING This project strengthens the nurse-midwifery services in rural areas by developing distance education technologies to bring an accredited nurse-midwifery program to rural communities. The Community-based Nurse-midwifery Education Program (CNEP) is a national training program. This project expands the CNEP electronic bulletin board network to enable participation by rural students and their preceptors, increases the number of rural clinical sites for midwifery education, and develops

continuing education course work based on computer and telecommunications technologies. The consortium includes the grantees and the Frances Payne Bolton School of Nursing at Case Western Reserve University.

Office of Rural Health Policy three-year outreach grant of $785,207 FYs 1993-1995

Jeannette Woods, Frontier School of Midwifery and Family Nursing, Hospital Hill, Hyden, KY 41749 606-672-2312

GRAYSON COUNTY HOSPITAL FOUNDATION Health care providers at the Twin Lakes Regional Medical Center use high-speed transmission of high-resolution digitized X-rays to access radiological diagnostic services in Louisville on a 24-hour basis for a six-county area.

Rural Utilities Service grant of $102,000 FY 1995

Steven Meredith, Grayson County Hospital Foundation, 910 Wallace Avenue, Letchfield, KY 42754 Phone 502-259-9400

JAMES B. HAGGIN MEMORIAL HOSPITAL This project enhances the availability of essential specialty services for residents of Mercer County, Kentucky. The project uses an interactive video system to link a primary care facility and the local mental health agency with the University of Kentucky Medical Center. The system currently provides specialty services in child psychiatry and dermatology, continuing education for health care professionals, and community health education. The consortium is comprised of this grantee, the Bluegrass Regional Mental Health Mental Retardation Board, and the University of Kentucky Medical Center.

Office of Rural Health Policy three-year outreach grant of $744,443 FYs 1995-1997

Earl Motzer, Ph.D./FACHE or Steven Sleeper, James B. Haggin Memorial Hospital, 464 Linden Avenue, Harrodsburg, KY 40330 Phone 606-734-5441, Fax 606-734-3154

MURRAY CALLOWAY COUNTY HOSPITAL This project funds development of a telemedicine network that links the Murray-Calloway County Hospital hub site in Murray, Kentucky, to Trigg County Hospital located 35 miles away in Cadiz. The network allows general practice medical staff to send digitized radiographs for professional interpretation and medical advice. The service area includes Trigg and Calloway Counties.

Rural Utilities Service grant of $20,871, with a $32,021 loan FY 1997

James W. Taylor, Murray Calloway County Hospital, 803 Popler Street, Murray, KY 42071 Phone 502-762-1103, Fax 502-767-3600

MURRAY STATE UNIVERSITY This project expands the number of end users and services of a two-way compressed video, audio, and data distance learning education and health care network in eight western counties. New services include teleradiology, distance diagnostic consultations, and a nurse anesthetist program.

Rural Utilities Service grant of $319,376 FY 1994

Dr. John Yates, Center for Continuing Education, Murray State University, P.O. Box 9B, Murray, KY 42071-0009 Phone 502-762-4150

UNIVERSITY OF KENTUCKY, KENTUCKY TELECARE NETWORK The Kentucky TeleCare Network, operational since December 1995, has grown to include four sites on the University of Kentucky Medical Center campus, eight rural hospitals, and two primary care centers. TeleCare utilizes VTEL interactive video conferencing equipment and FarSite- and MedVision-based systems for still-image and store-and-forward applications. Clinical applications include dermatology, pediatric cardiology, child/adult psychiatry, emergency/trauma, pre-op anesthesia screening, vascular surgery clinics, tumor boards, nutritional counseling, neurology, neurosurgery, nurse case management, and plastic surgery consults. TeleCare is also used for administrative and educational programs. Examples include programming with AHECs and other administrative and educational programs, journal clubs, and grand round programs, which are supplemented by interactive fireside chats. The Appalachian Regional Commission contributed $495,256 in a prior year.

Office of Rural Health Policy three-year telemedicine grant of $1,388,550 FYs 1994-1996

Office of Rural Health Policy/OAT three-year telemedicine grant. FY 1997 - $340,646

Rob Sprang, University of Kentucky Research Foundation, 201 Kinkead Hall, Lexington, KY 40506-0057 Phone 606-257-6404, Fax 606-257-2881, E-mail<rsprang@pop.uky.edu>

LOUISIANA

ACADIA-ST. LANDRY HOSPITAL This project connects a Lafayette-based radiology service to Acadia-St. Landry Hospital located in Church Point, Louisiana, to serve a primarily low-income area that has difficulty attracting health care professionals. The equipment purchased provides video conferencing, health care education, and high-quality diagnostic capabilities. The project is part of a coordinated effort to fill gaps created by declining state budgets for health care.

Rural Utilities Service grant of $50,000 FY 1996

Cathy Fernandez, Acadia-St. Landry Hospital, P.O. Box 1473, Hammond, LA 70404 Phone 504-542-4005

LOWER CAMERON HOSPITAL SERVICE DISTRICT This project supports a Rural Louisiana TeleMed and TeleEd Network (RLTTN) connection to the Lower Cameron Hospital Service District. RLTTN is a consortium of 11 medical and educational facilities serving southwest Louisiana, a predominately rural and medically underserved area. The service area includes the parishes of Allen, Beauregard, Calcasieu, Cameron, Concordia, Jefferson Davis, and Lafourche; the Enterprise and Champion communities; Macon Ridge; and Thibodaux.

Rural Utilities Service grant of $299,200 FY 1997

Cathy Denison-Wicke, Telemedicine Department, Lake Charles Memorial Hospital, 1701 Oak Park Boulevard, Lake Charles LA 70601 Phone 318-494-2861, Fax 318-494-6742, and E-mail <cdenison@lcmb.com>, <sctemed@mail.camtel.net>

NORTHEAST LOUISIANA HEALTH NETWORK, INC. This network, located in Columbia, Louisiana, is a nonprofit health care consortium of 10 hospitals that serve 9 rural parishes (counties) with a 287,600 population base. The network provides health care to low-income, economically depressed rural areas through telecommunications and outreach services. The project assesses a proposed telemedicine plan to serve this area affected by declining state budgets for public health and failure to attract health care professionals. The proposed system establishes a consultative/diagnostic link at a primary hospital, with connectivity to small rural hospitals lacking medical expertise. Future benefits and services will include immediate diagnosis for radiology imaging, increased accessibility of improved medical care, new medical staff specialists through referral and intrahospital agreements, reduced travel costs and inpatient hospital stay, and accessibility to continuing education and teleconferencing programs.

Rural Utilities Service grant of $336,124 FY 1996

Carol Fernandez, Northeast Louisiana Health Network, Inc. P.O. Box 1473, Hammond, LA 70404 Phone 504-542-4005, Fax 504-345-9046

SOUTH CAMERON MEMORIAL HOSPITAL South Cameron Memorial Hospital s Rural Health Outreach Telemedicine Project uses two-way interactive video to link rural hospitals to urban medical specialists. The telemedicine project provides medical consultation, diagnosis, and related health procedures, including telepsychiatry. In addition, the system is being used extensively for teleconferences and telecontinuing education programs. The telemedicine outreach consortium consists of three rural hospitals, a state medical school, two regional charity hospitals, a rural state facility for persons with disabilities, a regional tertiary care facility, and a mobile health screening van. This project is included as a component of the ORHP/OAT s national evaluation of telemedicine.

Office of Rural Health Policy three-year grant of $821,000 FYs 1994 1996

Cathy Denison-Wicke, Telemedicine Department, Lake Charles Memorial Hospital, 1701 Oak Park Boulevard, Lake Charles LA 70601 Phone 318-494-2861, Fax 318-494-6742, E-mail <cdenison@lcmb.com>, <sctemed@mail.camtel.net>

SOUTHWEST LOUISIANA HOSPITAL The TeleHealth Network of Louisiana (TeleHealth Net) project creates a live, two-way interactive video network to improve the delivery of medical diagnosis, preventive health care, patient education, continuing education for health care professionals, and wellness education for the general public. Using video teleconferencing technology, TeleHealth Net links multiple medical, public health, mental health, and educational resources within rural Louisiana. The project will serve rural citizens in southwest, southeast, central, and northern Louisiana who have limited access to health care services. By electronically linking existing health care consortia, new partners, Louisiana s rural residents, and health care professionals, TeleHealth Net will significantly improve access to basic and specialized medical services, including substance abuse and mental health counseling, and

provide access to expanded educational opportunities. The project demonstrates the feasibility of improving rural health delivery using video conference technology to access a broad range of services at multiple sites. TeleHealth Net will also use a mobile clinic with interactive capabilities. The project will not only reduce the costs associated with rural patients having to travel great distances to receive specialized care, but it will also improve the quality of medical care delivered to the communities served. Project partners include Lake Charles Memorial Hospital, South Cameron Memorial Hospital, DeQuincy Memorial Hospital, Leesville Development Center, Southwest Louisiana Office of Public Health, Louisiana State University School of Social Work, Louisiana State University Medical Centers at New Orleans and Shreveport, Southwest Louisiana AHEC, South Cameron Wellness Program Consortium, and the Concordia Substance Abuse Council Consortium.

National Telecommunications and Information Administration grant of $515,332 towards a total project cost of $1,102,496 over 18 months FY 1997

Cathy Denison-Wicke, Telemedicine Department, Lake Charles Memorial Hospital, 1701 Oak Park Boulevard, Lake Charles LA 70601 Phone 318-494-2861, Fax 318-494-6742, E-mail <cdenison@lcmb.com>,<sctemed@mail.camtel.net>

TRI-WARD GENERAL HOSPITAL This project upgrades the level of medical services to the local population, which is predominately low-income and elderly, by creating a teleradiology link with Lincoln General Hospital in Russian, Louisiana. Distance learning is a secondary project goal. The service area is Union Parish County.

Rural Utilities Service grant of $74,200 FY 1997

Carol Fernandez, Tri-Ward General Hospital, P.O. Box 1473, Hammond, LA 70404 Phone 504-542-4005, Fax 504-345-9046

MAINE

DOWNEAST TELEMEDICINE NETWORK The DownEast Telemedicine Network (Regional Medical Center at Lubec, Inc.) will connect 14 health and mental health care organizations (health centers, Indian health centers, a hospital, private physician offices, mental health agencies, a home care agency, and a school system) in Washington County, with a tertiary care and a psychiatric hospital in Bangor. The network will begin operations in the spring of 1998 using open-architecture Polycom. The following clinical telemedicine services will be provided: emergency medicine, neonatology, substance abuse counseling, mental health counseling, diabetes education, endocrinology, and neurology. The system will also be used for health care student supervision, continuing education, and administrative meetings.

Office of Rural Health Policy/OAT three-year telemedicine grant. FY 1997 - $310,430

Kenneth Schmidt, Regional Medical Center at Lubec, Inc., Rural Route 2, Box 380, South Lubec Road, Lubec, ME 04652 Phone 207-733-5541, Fax 207-733-2847, E-mail <kschmidt@nemaine.com>

MARYLAND

UNIVERSITY OF MARYLAND AND BDM FEDERAL, INC. The University of Maryland at Baltimore and BDM Federal, Inc., developed an advanced mobile telemedicine testbed to investigate the feasibility and practicality of transmitting real-time vital sign data and video images of patients from inside an ambulance to a hospital s trauma center and clinical information system. Transmission would occur through cellular communications and local area network technology. This mobile testbed evaluates whether technology can improve the quality and timeliness of care during the golden hour and provide better information to the emergency room staff prior to patient arrival. Proven feasible, this mobile telemedicine application could be used in trauma centers throughout the United States.

National Library of Medicine contract amount unavailable. Performance period is September 30, 1996, to September 29, 1997.

David Gagliano, BDM Federal, Inc., 1501 BDM Way, McLean, VA 22102 Phone 703-848-6134

MASSACHUSETTS

BETH ISRAEL DEACONESS MEDICAL CENTER The center uses telemedicine to provide educational and emotional support to families of high-risk newborns both during their hospitalization and following discharge. The use of technology helps parents understand their baby s continuing medical needs and cuts costs through more efficient parental care. Parents may observe their baby s hospital care from home by means of a television monitor, thereby improving home care after the baby is discharged. Beth Israel extends the home-hospital link for follow-up.

National Library of Medicine contract amount unavailable. Performance period is September 30, 1996, to September 29, 1999.

Charles Safran, M.D., Principal Investigator, Beth Israel Deaconess Medical Center, 350 Longwood Avenue, Boston MA 02115 Phone 617-732-5925

BRIGHAM AND WOMEN S HOSPITAL This project is a collaboration among three medical informatics research groups (Leland Stanford Junior University, Columbia University, and Brigham and Women s Hospital) to build Internet-accessible shared systems that support computerized patient records, clinical research protocols, medical vocabulary servers, teleconferencing, and health professions education.

National Library of Medicine contract amount of $991,398 Performance period is September 30, 1996, to December 31, 1999.

Robert A. Greenes, M.D., Brigham and Women s Hospital, 75 Francis Street, Boston, MA 02115 Phone 617-732-6281, Internet website <http:/dsg.harvard.edu/public/nii/HealthQuest.html>

LAZO GERTMAN AND ASSOCIATES, INC. This project designs, implements, field tests, and evaluates an interactive multimedia and advanced telecommunications system to provide 24-hour continuous care for elderly patients as individuals or in group care situations. An electronic network links patients at home or at congregated sites to home health nurses, physicians in their offices, and hospital emergency departments. Data on health status change will be collected and compared for an experimental group versus a usual care group. The resulting product from this NLM research is targeted to HMOs and other organizations that assume capital financial risks for the seriously and chronically ill. Each software application costs approximately $1,200, with the potential of being applied to more than one million households. Perceived benefits include reduced hospital and nursing home use, fewer routine doctor and home health care visits, greater efficiency for providers, and psychosocial support for patients and their families.

National Library of Medicine contract amount unavailable FY 1997

Paul Gertman, Lazo Gertman and Associates Inc., 1334 Main Street, Waltham, MA 02154 Phone 617-647-7800

MICHIGAN

BALDWIN FAMILY HEALTH CARE, INC. A recently completed beta test project for a cardiovascular in-home hybrid telephone-computer unit called smart phone was administered by Baldwin Family Health Care, Inc. Baldwin is the only health care provider in rural Lake County, Michigan, where the ratio of doctors to residents is 3.5 times higher than the national average. The information technology design, called Healthlink, involved the use of a communications informatics system and clinical application consisting of clinical content, event manager, user interface, and database software. The software enabled a doctor to direct clinical case management. The most acute cases received information appliances that attach to blood pressure cuffs. Ninety-six percent of the elderly Lake County patients tested almost all of whom were computer illiterate learned to use the smart phone and the associated clinical application. These results were nearly double the hoped-for competency level. Training was provided by a nurse with minimal computer experience. Healthlink is being expanded by Butterworth Regional Health Network, a network that includes Baldwin and other rural hospitals in west Michigan. New applications include low-risk pregnancy, high-risk pregnancy, child asthma, obesity management, and infant care.

Rural Utilities Service grant of $250,000 FY 1994

Lynn Wise, Butterworth Health Corporation, 100 Michigan Northeast, Mail Code 73, Grand Rapids, MI 49503 Phone 616-319-3190

MICHIGAN ASSOCIATION FOR LOCAL PUBLIC HEALTH The Michigan Association for Local Public Health, in partnership with the State Department of Health, creates a Michigan Public

Health Information Network by integrating multiple statewide and local networks. Using the existing statewide area network, this project connects scattered local area networks, updates and moves the current statewide electronic conferencing system to the statewide network, and integrates it with new electronic mail and file transfer facilities. The project maintains and expands existing methods of access to public health data systems by providing a link to the statewide educational network and giving users access to the Internet and various Internet services.

National Telecommunications and Information Administration grant of $113,438 towards a total project cost of $226,876 FY 1994

Jeffrey Weihl, Michigan Association for Local Public Health, P.O. Box 13276, Lansing, MI 48901 Phone 517-485-0660

MICHIGAN PUBLIC HEALTH INSTITUTE The Michigan Public Health Institute will implement an electronic Childhood Immunization Information Network (ChIIN) in the Detroit area. The network will serve seven county health departments and eight Detroit health centers. ChIIN will link private and public health care providers through a standard shared network. The local health department, schools, HMOs, and other organizations charged with monitoring and improving immunization rates will have access to the network, which will generate immunization reminders for the child s parents and doctor. The project is a collaborative effort and part of a state goal to increase immunization rates Michigan ranked 50th in a recent CDC nationwide survey of preschool immunization rates.

National Telecommunications and Information Administration grant of $650,000 towards a total project cost of $1,300,00 FY 1996

Caralee Roberts, Michigan Public Health Institute, 2465 Woodlake Circle, Okemos, MI 48864 Phone 517-349-2626

MID-MICHIGAN REGIONAL HEALTH SYSTEM, INC. This project funds equipment for a telemedicine computer network for patient record management and communications among end-user sites and hubs. Project benefits will include remote patient assessments, patient education sessions, staff education, and overall cost effectiveness of delivering patient care.

Rural Utilities Service grant of $336,124 FY 1996

Harlan Goodrich, Mid-Michigan Regional Health System, Inc., 4005 Orchard Drive, Midland, MI 48670 Phone 517-839-3345

RURAL EMERGENCY MEDICAL EDUCATION CONSORTIUM (REMEC) This three-year project establishes the first interactive distance learning network for health care professionals in northern Michigan and the Upper Peninsula. The network covers 20 counties with a population of 300,126 people within an area of 12,166 square miles. Independent hospitals and clinics come together to design and implement a self-sustaining program to meet local and regional needs. The 11 consortium members have access to voice, data, and video transmission capabilities and can broadcast and receive presentations. Interactive distance learning opportunities are provided for emergency department physicians, nurses, and EMS personnel.

Future network connections will enhance the consortium s ability to video conference within the Michigan Collegiate Telecommunications Association (MiCTA). With these connections, REMEC members will be able to broadcast and receive distance learning programming from MiCTA colleges, universities, and affiliated K 12 school systems. REMEC uses a dedicated leased T-1 network capable of supporting the transmission of interactive distance learning programs at flexible bandwidths ranging from 1/12 to broadcast quality. Cost efficiencies come from maximizing usage of the network for voice, data, and applications, given the fixed cost of the T-lines.

Office of Rural Health Policy three-year outreach grant of $900,000 FYs 1993-1995

Daniel Fly, Rural Emergency Medical Education Consortium, 1105 6th Street, Traverse, MI Phone 616-935-7974, Fax 616-935-7941

SCHEURER HOSPITAL This grant funds a telemedicine project called Project InterLink serving Scheurer Hospital, the Scheurer Family Medical Clinic, and three clinics in rural areas. Project InterLink equips each clinic, as well as patient rooms, with computers that will transmit patient records to all physicians, staff, and emergency room personnel. The service area is Huron County.

Rural Utilities Service grant of $99,864, with a loan of $52,820 FY 1997

Dwight Gascho, Scheurer Hospital, 170 North Casville Road, Pigeon, MI 48755 Phone 517-453-3223, Fax 517-453-2411

UNIVERSITY OF MICHIGAN MEDICAL CENTER The University of Michigan Medical Center (UMMC) proposes to demonstrate Internet-based technology that fosters remote physician collaboration. UMMC will develop and demonstrate a starter package of Internet tools that could be used as the technological underpinning of a CHIN. Components for the CHIN include encrypted electronic mail, an interface that converts mainframe-stored discharge summaries to electronic mail messages, and a Mosaic-based server that supports electronic document interchange using the ANSI X12 standard and health level-seven exchanges of patient information. As they are developed, these components would be tested in the field with UMMC s network of referring physicians.

National Telecommunications and Information Administration grant of $225,085 towards a total project cost of $488,788 FY 1994

Timothy Pletcher, University of Michigan at Ann Arbor, MCTI 4251 Plymouth Road B25L3l, Ann Arbor, MI 48105-3639 Phone 313-647-1254

UPPER PENINSULA HEALTH CARE NETWORK AND MARQUETTE GENERAL HOSPITAL The Upper Peninsula Health Care Network is an incorporated consortium of regional health organizations that serves 305,000 residents in 15 counties. Members include Marquette General Hospital, a regional medical center, 14 community medical facilities, and the Sault Saint Marie Tribe of Chippewa Indians. Federal agencies have supported network development, as well as Marquette General Hospital system capabilities. The Marquette General Hospital project is improving and expanding access to primary care, specialty services, and continuing education

for health professionals in the Upper Peninsula of Michigan. The project is establishing, over three years, three rural health clinics in underserved areas that are developing a sustainable system of teleradiology and video conferencing for physician consultations at eight hospitals and clinic sites. The project is also developing continuing education and community education programs that will be delivered using the video conferencing systems. Network components include data transfer, teleradiology, and video teleconferencing. The Marquette General Hospital is included as a component of the ORHP/OAT s national evaluation of telemedicine.

Office of Rural Health Policy three-year outreach grant total of $906,233 FYs 1994-1996

Rural Utilities Service grant of $327,224 for network development FY 1996

Sally Davis, Marquette General Hospital, 420 West Magnetic Street, Marquette, MI 49855 Phone 906-225-3470, Fax 906-225-3037, E-mail <uptn@vixa.voyager.net>

MINNESOTA

ALLINA HEALTH SYSTEMS The Allina Health Systems/Rural Health Alliance Telemedicine Network, operational since May 1995, consists of 27 sites (7 urban and 20 rural). Seventeen rural hospital facilities, as well as six urban tertiary care centers, will participate in this network. The network is a hub-and-spoke design using compression technology and dedicated T-1 lines. All sites have VTEL units with interactive video conferencing. C MAXICON hardware is in six sites as a beta project. Desktop technology will be introduced in 1998. The alliance provides tele-emergency medicine to three rural sites and consultation to all sites upon request. Beginning in January 1998, the network will provide five specialty clinics in cardiology, neurology, psychiatry, oncology, and dermatology, as well as continue to provide emergency medical services. The network will use store-and-forward technology for dermatology consultations at 17 sites beginning in January 1998 and will use diagnostic teleradiology at six sites. The network is used for continuing education for physicians and allied health professionals. The Office of Rural Health Policy contributed $211,462 towards network development in a prior funding year.

Office of Rural Health Policy/OAT three-year telemedicine grant. FY 1997 - $280,000

Mary Ellen Wells, Allina Health Systems, 5601 Smetana Drive, Box 9310, Minnetonka, MN 55343-5012 Phone 612-682-7180, Fax 612-682-7123, E-mail <mwells@alliana.com>

ARLINGTON MUNICIPAL HOSPITAL The hospital, located in south central Minnesota, is the only hospital serving the rural area of Sibley County. Funds are used for three telemedicine components emergency room coverage, video conferencing for consultation and continued education, and teleradiology. Equipment purchases will include conferencing units, peripheral cameras, a laser film scanner, and two dedicated phone lines installed.

Rural Utilities Service grant of $203,756 FY 1996

Lynette Froehlich, Arlington Municipal Hospital, 601 West Chandler, P.O. Box 620, Arlington, MN 55307 Phone 507-964-2271

DOUGLAS COUNTY HOSPITAL The Allina Health System/Rural Alliance Telemedicine Network uses T-1 capabilities to link eight rural community hospitals to each other and to Allina Health System tertiary care facilities in the Minneapolis/St. Paul area. The network reduces provider isolation and enhances access to specialized medical services by providing medical consultation, teleradiology, continuing medical education, resident rotations, and administrative applications. The network developed the Emergency Department Telemedicine Service (EDTS), which provides after-hours (5:00 p.m.-7:00 a.m.) emergency service coverage through interactive video. The network also provides access for community development activities and community education. This grantee is part of the 1997 Allina Rural Telemedicine project. The project is included as a component of the ORHP/OAT s national evaluation of telemedicine.

Office of Rural Health Policy three-year outreach grant of $595,056 FY 1994 1996

Erik Malchow, Douglas County Hospital, 111 17th Avenue East, Alexandria, MN 56308 Phone 320-762-8602, Fax 320-762-6089, E-mail <rhalliance@aol.com>

FIRST CARE MEDICAL SERVICES (FIRST CARE) First Care is a 43-bed hospital offering acute care nursing services and advanced life support ambulance service. A grant/loan package funds equipment and software for a rural telemedicine consultation network to link primary caregivers with specialists. Service area includes Beltrami, Clearwater, Mahonmen, Polk, and Red Lake Counties.

Rural Utilities Service grant of $15,502, with a $39,648 loan FY 1997

Tim Scheving, First Care Medical Services, 1600 East Broadway, Columbia, MO 65201 Phone 218-435-1133, Fax 218-435-1412

UNIVERSITY OF MINNESOTA TELEMEDICINE PROJECT The University of Minnesota Academic Health Center is linked to three rural sites in the towns of Wadena, Moose Lake, and Staples by means of dedicated T-1 lines in the Minnesota Equal Access Network Services (MEANS) system. The network has been operational since March 1995, having provided more than 230 interactive specialty consults in dermatology, orthopedics, radiology, psychiatry, and other areas. The system is also used to distribute grand rounds, case discussions, and continuing education to health professionals at these sites. Medical students in the Rural Physician Associates Program use the system to participate in conference and case discussions with supervising faculty at the University of Minnesota. Recently the project was expanded to evaluate the effectiveness of home monitoring devices at the three rural sites. This project is included as a component of the ORHP/OAT s national evaluation of telemedicine.

Office of Rural Health Policy three-year telemedicine grant of $1,107,782 FYs 1994 1996

Theodore Thompson, M.D., University of Minnesota Telemedicine Project, University of Minnesota, Box 734 UMHC, 420 Delaware Street Southeast, Minneapolis, MN 55455 Phone 612-624-3819, Fax 612-626-4853

Maureen Ideker, Project Director, University of Minnesota Telemedicine Project, Tri-County Hospital, 415 North Jefferson Street, Wadena, MN 56482 Phone 218-631-7481, Fax 218-631-7496, E-mail <mideker@weta.net>

MISSISSIPPI

DELTA RURAL HEALTH NETWORK OF MISSISSIPPI, INC. The network includes 10 small, independent rural acute hospitals. Grant funds are used to develop a teleradiology network for on-site needs and 24-hour service. The service area includes Humphreys, Kilmichael, Quitman, and Tallahatchie Counties.

Rural Utilities Service grant of $172,368 FY 1997

Debra L. Griffin, P.O. Box 510, Belzoni, MS 39038 Phone 601-247-3831, Fax 601-247-4854

NORTH MISSISSIPPI HEALTH SERVICES, INC. North Mississippi Health Services (NMHS), Inc., is affiliated with over 45 medical centers, clinics, and institutions covering a 30-county service area in northeast Mississippi and northwest Alabama. The grant enables NMHS to implement a long-range solution to the problems of serving sparsely populated rural areas by (1) strengthening support for existing rural hospitals, clinics, physicians, and other health care professionals; (2) using telemedicine as the most effective tool and as an end-use product for recruitment, training, and support of physicians willing to work in rural communities; and (3) linking medical and educational community resources and personnel for maximum impact on local communities that share health care concerns.

Rural Utilities Service grant of $336,124 FY 1996

Mac Stanford, North Mississippi Health Services, BioMedical Services Department, 8305 Gloster, Tupelo, MS 38801 Phone 601-841-3042

UNIVERSITY OF MISSISSIPPI MEDICAL CENTER This project supports the Mississippi Health Sciences Information Network in developing a statewide electronic infrastructure for health sciences information access and delivery that facilitates further integration with high-performance computer networks.

National Library of Medicine contract award of $638,714 FY 1997

Ada Seltzer, University of Mississippi Medical Center, 2500 North State Street, Jackson, MS 39216-4505 Phone 601-984-1290

MISSOURI

BATES COUNTY HEALTH CENTER The Building Healthy People in Healthy Families project targets young parents, particularly teens, to address such concerns as lack of prenatal care, infant mortality, and unplanned parenthood. Rural residents receive integrated services and comprehensive care in their home areas through telecommunications links and health departments obstetrical care management. Rural hospitals are connected by continuous fax with the St. Luke s Prenatal Center in Kansas City, Missouri, to transmit results from diagnostic screening tests to assess fetal well-being. The consortium includes the grantee, the health department, and a tertiary care prenatal center.

Office of Rural Health Policy outreach grant of $132,450 FY 1996

George Taylor, Bates County Health Center, 501 North Orange, Butler, MO 64730 Phone 816-679-6108

BOONE HOSPITAL CENTER This project allows Boone Hospital to set up a home access program that connects home health care staff to patient s homes. Initially, 60 patients will be served by two-way video/audio units. Eventually, 360 patients will be served each year. The service area includes seven communities in six rural Missouri counties of Camden, Macon, Monroe, Morgan, Pettis, and Shelby.

Rural Utilities Service grant of $174,210 FY 1997

Lynn Hostetler, Boone Hospital Center, 1600 East Broadway, Columbia, MO 65201 Phone 573-815-3504, Fax 573-815-2629

BOONE HOSPITAL CENTER, SCHOOL-COMMUNITY TELEHEALTH NETWORK The Boone Hospital Center also set up a School-Community TeleHealth Network under another federal grant. The School-Community TeleHealth Network is a partnership between rural hospitals and schools to address health care needs in three Missouri counties. Project funds are used to purchase telemedicine and distance learning equipment necessary to link the hospitals and schools. Examples of hospital/school services include access to Boone Hospital Center physicians, telemedicine consultation with other specialists, ongoing health care programs for school children and community members, and on-site continuing education program for health care providers.

Rural Utilities Service grant of $336,124 FY 1996

Dr. Robert Hurst, Boone Hospital Center, 1600 East Broadway, Columbia, MO 65201 Phone 573-815-4545

CAMERON COMMUNITY HOSPITAL This project links seven rural health clinics to the Cameron Community Hospital medical and health care services to better serve residents in four counties. Services will include medical consultations and teleradiology, educational, and case management services.

Rural Utilities Service grant of $344,000 FY 1995

Joe Abrutz, Cameron Community Hospital, 1015 West 4th, Cameron, MO 64429 Phone 816-632-2101

CENTRAL BOARD FOR DISTANCE LEARNING, INC. This grant enables the Central Board for Distance Learning, Inc., to expand an existing interactive video network by connecting six schools, a hospital, and a community center located in western Missouri. This network project leverages existing teacher resources for continuing education, accesses Internet medical resources, and establishes a foundation for a future telemedicine network. Two local clinics contributed financing of $100,000.

Rural Utilities Service grant of $300,000 FY 1995

Charles Braithwait, Central Board for Distance Learning, Inc., R1 Box 242, Lowry City, MO 64763 Phone/Fax 417-644-2756

HOWARD COUNTY HOME HEALTH AGENCY This new project is designed to provide health and wellness services to Howard County African American and Caucasian elderly, teens, and adults by means of a health ministries approach. Strategies include assessing health risks and taking an inventory of spiritual values to establish baselines for developing interventions, training parish nurses and project partners, and developing health programs to address quality-of-life issues. The project will employ mobile interactive teleconferencing for use by home health and hospice staff, ministers, physicians, counselors, and family members. The network is comprised of the Howard County Home Health Agency (grantee) and Boone Hospital Center (Columbia, Boonslick Ecumenical Heath Ministries, and two churches).

Office of Rural Health Policy/OAT three-year outreach grant. FY 1997 - $181,899

Serese M. Wiehardt, Howard County Home Health Agency, 104 East Davis Street, Fayette, MO 65248 Phone 816-248-2100, Fax 816-248-3347, E-mail <howhom@c-magic.com>

MISSOURI TELEMEDICINE NETWORK, UNIVERSITY OF MISSOURI-COLUMBIA Using interactive video conferencing and PC-based networks (store-and-forward, E-mail, Internet), the Missouri Telemedicine Network (MTN) connects 20 sites 12 hospitals, 4 primary care clinics, 1 multispecialty clinic, 2 schools of medicine, and 1 Area Health Education Center (AHEC). The network started with two sites in May 1995 and gradually expanded to its current size. Two additional sites are planned. The network provides clinical consultations, educational programming, and administrative conferencing for all its members. MTN provides consultations in cardiology, psychiatry, dermatology, radiology, neurology, oncology, emergency medicine, diabetes, pulmonary medicine, surgical follow-up, child health, children with special needs, physical medicine and rehabilitation, obstetrics and gynecology, and SAFE (Sexual Abuse and Forensic Evaluation). MTN is also used in conjunction with the supervision of rural AHEC medical students and residents.

Office of Rural Health Policy three-year telemedicine grant of $1,237,640 FYs 1994 1996

Office of Rural Health Policy/OAT three-year telemedicine grant. FY 1997 - $310,836

Other contributors are: GTE ($607,000), Northeast Missouri Telephone ($221,000), ALLTEL Missouri ($116,000), AT&T ($152,000), University of Missouri at Columbia ($900,000), and an unspecified award from Southwestern Bell.

Weldon Webb, The Curators of the University of Missouri, University of Missouri-Columbia, Office of Sponsored Programs, 310 Jesse Hall, Columbia MO 65211 Phone 573-882-2256, Fax 573-884-5307. An additional contact person is Joe Tracy Phone 573-882-4844

SAINT LOUIS UNIVERSITY, SCHOOL OF PUBLIC HEALTH The St. Louis University School of Public Health, in partnership with the State Department of Health, Bureau of Immunization, and the St. Louis City and County Health Departments, will develop a St. Louis Integrated Immunization System as part of a five-year plan to raise and maintain the immunization rates of children under age two. By using real-time access to immunization information, Missouri hopes to raise the immunization rate from 38 percent to 45 percent.

National Telecommunications and Information Administration grant of $136,966 towards a total project cost of $273,933 FY 1994

Feifei Wei, Ph.D., St. Louis University, School of Public Health, 3663 Lindle Boulevard, St. Louis, MO 63108 Phone 314-977-8102

UNIVERSITY OF MISSOURI-COLUMBIA SCHOOL OF MEDICINE Working with three small Missouri communities, the Columbia School of Medicine implements and analyzes the benefits of rural telemedicine services. The project creates links among the three community health professionals, the university s Health Sciences Center, the four university hospitals, the medical library, and hundreds of specialists. Network use is tracked, along with network effect on ability of rural areas to retain their physicians, health care utilization patterns, and cost savings.

National Library of Medicine contract amount unavailable Performance period is September 30, 1996, to September 29, 1999.

Joyce Jackson, Ph.D., University of Missouri, Columbia School of Medicine, Medical Informatics Group, 605 Lewis Hall, Columbia, MO 65211 Phone 573-884-7717, Internet website <http://www.hsc.missouri.edu/main_ndx/health/tmeddx.html>

WASHINGTON UNIVERSITY Six hospitals use an existing telemedicine network in St. Louis and neighboring Illinois towns to implement two programs to ensure that elderly patients are taking the correct dosages of their medications. The DoseChecker Program uses pharmacy orders and patient data such as age, sex, and weight to examine each prescription and issue dosage warnings where warranted. The other system, Adverse Drug Event Monitor, pulls together patient drug orders and lab test results, and alerts hospital pharmacists to signs of adverse reaction. Doctors and health professionals are notified immediately when a patient is at risk.

National Library of Medicine contract amount unavailable Performance period is September 30, 1996, to January 31, 2000. (Project funds are from Agency for Health Care Policy and Research.)

Mark Frisse, M.D., Associate Dean, Washington University, 660 South Euclid Avenue, Medical School Library, St. Louis, MO 63110 Phone 314-362-2773

MONTANA

CRITICAL ILLNESS AND TRAUMA FOUNDATION, INC. This project establishes The Electronic Network for Coordination of Emergency Medical Service Data and Education (TENCODE). This network supports improvement in trauma outcomes by standardizing data collection, offering continuous quality improvement activities, and providing remote training and professional medical support to prehospital EMS workers. The consortium includes the grantee, Montana State University, Montana Departments of Health and Environmental Services and Justice, the Highway Safety Division, Montana AHEC, Montana EMS Association, and the Western, Eastern, and Central Regional Trauma Committees.

Office of Rural Health Policy outreach grant of $377,873 FY 1996

Nels Sanddal, Critical Illness and Trauma Foundation, Inc., 300 North Wilson Avenue, Suite 3002, Bozeman, MT 59715 Phone 406-582-2659

EASTERN MONTANA TELEMEDICINE NETWORK The Eastern Montana Telemedicine Network (EMTN) uses two-way interactive video conferencing to deliver specialty health care to 10 geographically distant communities in eastern Montana. The project has been partially funded with a grant from RUS and ORHP. The 1993 RUS grant ($489,210) was used to purchase video conferencing and network termination hardware for a telemedicine system for five sites. The ORHP grant expanded the network from five isolated rural communities to seven and added another hub site at the Behavioral Health Clinic in Billings. In 1995, EMTN connected four rural high schools for continuing education courses, including capabilities for clinical nursing and nursing course curricula. Several network sites are designated as health professional shortage areas. This project is included as a component of ORHP/OAT s national evaluation of telemedicine.

Office of Rural Health Policy three-year telemedicine grant of $1,321,484 FYs 1994 1996

U.S. West Communications, Inc., contributed $375,000 towards this project.

Thelma McClosky-Armstrong, Director of Telemedicine, Eastern Montana Telemedicine Network, 2800 10th Avenue North, P.O. Box 37000, Billings, MT 59107 Phone 406-657-4057, Fax 406-657-4875, Pager 406-657-4000, E-mail <emtn.@d-bchs.edu>

MONTANA DEACONESS MEDICAL CENTER This grant funds a center project called Realizing Education and Community Health (REACH) and expands the medical center s video conferencing capabilities to remote areas of the state. Improvements include two-way interactive video capabilities, higher radiological transmission quality, and a wider variety of

health education programming. In addition, several laptop computers capable of transmitting medical data to the network, are used by visiting home nurses for enhanced home health care services.

Rural Utilities Service grant of $100,000 FY 1994

Lynn O Malby, Montana Deaconess Medical Center, 1101 26th Street South, Great Falls, MT 59405 Phone 406-455-5415

PARTNERS IN HEALTH TELEMEDICINE NETWORK The network integrates the Telemedicine Instrumentation Pack (TIP) unit, previously developed by NASA/KRUG Life Sciences for spaceflight medical applications, with terrestrial telemedicine applications such as video conferencing. The TIP unit, a small, hand-held, portable, medical diagnostic system, transmits clear and accurate color images of any affected area of a patient s body. The TIP unit will be placed at the Pryor Clinic, Pryor, Montana, which offers basic medical services. Staffed by one nurse, the clinic has no specialty care or mental health services available. The nurse must often refer patients to the IHS Crow Agency Indian Hospital in Crow Agency or to the Saint Vincent Hospital in Billings. Working in conjunction with the TIP unit at the Pryor Clinic, video conferencing equipment will be placed in the emergency rooms at Crow Agency and Saint Vincent Hospitals, allowing physicians there to discuss transmitted images of a patient s body. Located on the Crow Indian Reservation, both the Pyror Clinic and Crow Agency Indian Hospital are confronted with a need for mental health services in rural Montana. The Crow Reservation requested in-service training and counseling to deal with alcohol and drug addictions for both the Crow and Cheyenne Indian Nations. This telemedicine system will improve health care and mental health services for Native Americans of this rural area, as well as provide training to users. Project partners include Saint Vincent Hospital and Health Center, Pryor Clinic, Crow Agency Hospital, TIE Communications, Compression Laboratories, Inc., NASA, and KRUG Life Sciences (a Houston-based NASA subcontractor).

National Telecommunications and Information Administration grant of $464,264 towards a total project cost of $1,207,104 over 24 months FY 1997

John Zauher, Project Director, Saint Vincent Hospital, P.O. Box 35200, Billings, MT 59107-5200 Phone 406-657-7260

ROCKY BOY HEALTH BOARD, CHIPPEWA CREE TRIBE This project extends an existing telemedicine network to the Chippewa Cree Reservation to improve access to and enhance the quality of health care services. The telemedicine network will be used to expand specialty services and physician consultation; enhance the level of obstetrical, mental health/addiction, and geriatric services available on the reservation; and increase access to continuing education for physicians, lab technicians, X-ray technicians, physician therapists, registered and licensed practical nurses, medical records personnel, emergency medical technicians (EMTs), and administrators. The network is comprised of the Rocky Boy Health Board (Chippewa Cree Tribe) and REACH (Realizing Education and Community Health), a consortium of health care providers Benefits Health Care in Great Falls and eight rural hospitals and clinics linked to each other through telemedicine technology. The REACH Montana Telemedicine Network services eight rural/frontier counties in north central Montana.

Office of Rural Health Policy/OAT grant total of $151,721 FY 1997

Ed Parisian, Chippewa Cree Tribe, Rocky Boy Health Board, Rural Route 1, Box 664, Box Elder, MT Phone 406-395-4486, Fax 406-395-4781

ST. PETER S COMMUNITY HOSPITAL FOUNDATION The Southwest Montana Telepsychiatry Network uses interactive compressed video to improve access and quality of mental health services and education in a 12-county region of southwest Montana. The network is being used for direct patient care, court commitments, discharge planning conferences, family and peer visitation, and medication management. In addition, the system is used for psychiatric case consultations, continuing education, administrative meetings, Regional Trauma Advisory Board meetings, and other professional conferences. The consortium includes one general hospital, a community mental health center, Montana State Hospital for the Mentally Ill, the state facility for the developmentally disabled, and a county government. This project is included as a component of ORHP/OAT s national evaluation of telemedicine.

Office of Rural Health Policy three-year outreach grant of $806,067 FYs 1994 1996

Nancy Cobble, St. Peter s Community Hospital Foundation, 2475 Broadway, Helena, MT 59601 Phone 406-444-2800

NEBRASKA

BERGAN MERCY FOUNDATION, INC. This project improves health care for three isolated rural areas that are part of the Alegent Health System, a consolidated operation of Bergan Mercy Foundation located in Nebraska and Iowa. Specific services to be provided include X-ray, CAT scan, and ultrasound. The service area includes the counties of Adams and Harrison, Iowa; and Colfax, Nebraska. Local hospital foundations contributed $57,347 towards the project.

Rural Utilities Service grant of $75,945, with a $57,863 loan FY 1997

Robert Olson, Executive Director, Bergan Mercy Foundation, Inc., 7500 Mercy Road, Omaha, NE 68123 Phone 402-398-5510, Fax 402-398-6920

MID-NEBRASKA TELEMEDICINE NETWORK The Mid-Nebraska Telemedicine Network (Good Samaritan Hospital Foundation) connects 10 sites (8 hospitals and 2 rural health clinics) to a regional referral center known as Good Samaritan Health Systems a multispecialty acute care hospital and a psychiatric and chemical dependence facility. The network began operating in December 1995. Clinical services include cardiology, pulmonology, gastroenterology, orthopedics, pediatrics, trauma, dermatology, surgical follow-up, diabetic education, mental health, speech therapy, oncology, physical therapy, enderostomal therapy, vascular and thoracic surgery, internal medicine, infectious disease radiology, radiation oncology, otolaryngology, neurology, neurosurgery, respiratory therapy, rehabilitation medicine, arthritis education, rheumatology, and genetics counseling. The system is also used for supervision of residents, distance education, grand rounds, EMT education, and administrative meetings.

Office of Rural Health Policy three-year telemedicine grant of $1,447,260 FYs 1994 1996

Office of Rural Health Policy/OAT three-year telemedicine grant. FY 1997 - $380,641

Donna Hammack, Good Samaritan Hospital Foundation-Kearney, 4503 Second Street, P.O. Box 1810, Kearney, NE 68848-2703 Phone 308-865-2700, Fax 308-865-2933, E-mail <dhammack@gshs.org>

OUR LADY OF LOURDES HOSPITAL The project links 10 rural hospitals in northeast Nebraska. The system will provide continuous access to teleradiology, trauma, and emergency care.

Rural Utilities Service grant of $180,800 FY 1995

Gale Peterson, Our Lady of Lourdes Hospital, 1500 Koenigstein, Norfolk, NE 68701 Phone 402-644-7228

NEVADA

NEVADA RURAL HOSPITAL PROJECT FOUNDATION The foundation creates a telemedicine/telehealth care video, voice, and data network that connects four rural hospitals located in Winnemucca, Lovelock, Ely, and Hawthorne. The network enables two-way interactive teleconsultations with medical specialists in larger cities and urban trauma centers for emergency treatment support and distance education with the University of Nevada. Internet access provides educational and research support. This project helps rural hospitals retain patients, reduces health care professional isolation, and enables practitioners to upgrade their skills and conduct research.

National Telecommunications and Information Administration grant of $250,000 towards a total project cost of $507,690 FY 1996

Bill Welch, Nevada Rural Hospital Project Foundation, 4600 Keitzke Lane, Suite 0-269 Reno, NV 89502 Phone 702-827-4770

NEW JERSEY

NEWARK BOARD OF EDUCATION The Newark Board of Education, together with the New Community Corporation, is developing a networking program that will put Newark, New Jersey, citizens in touch with health care professionals, social service agencies, information services, and their neighbors. Individuals may access two community databases one for health-related community projects, where participants will have access to information related to their projects and health topics, and the other for neighborhood-related communications, where participants can communicate with each other, sharing history, music, writing, and other information.

Another component, Making Healthy Music, extends access to a greater number of inner-city residents. This project empowers residents to focus on and manage their own health issues to achieve a broader goal of improved primary health care delivery. A secondary goal is to redefine the relationship between the local school and the community to foster higher levels of student literacy. Community residents use grant-provided computers in their homes to access the Music system, through which they can communicate directly with local health and social services providers and participate in discussions. This project is managed by the Newark Board of Education, in association with the New Community Corporation and the University of Medicine and Dentistry of New Jersey.

National Telecommunications and Information Administration grant of $106,950 towards a total project cost of $147,370. A second grant of $99,800 funded the Making Healthy Music component FY 1995

Pamela Morgan, Newark Public Schools, Office of Instruction and Information Technology, 9th Floor, Room 1918, Newark, NJ 07112 Phone 201-733-8290

UNIVERSITY OF MEDICINE AND DENTISTRY OF NEW JERSEY (UMDNJ) The grantee implements an urban telemedicine project for the underserved areas of Newark and Camden. The project uses desktop telemedicine equipment and health information kiosks in seven multifunctional health care locations. The sites include three primary care practitioner offices, two community health centers, and kiosks in two public housing community sites. The five health care provider sites are linked with UMDNJ faculty through interactive video, audio, and data links. The kiosks enable local residents to read in English or Spanish about health topics, participate in video-based health education seminars, and communicate directly with health care providers. This urban project is designed to overcome several barriers shortage of primary care physicians, providers without timely access to current treatment protocols, cultural and linguistic barriers, and inadequate public transit. It is estimated that 60 percent of the Camden emergency room visits could have been addressed in a primary care setting. This project enlists collaborators from the public and private sector.

National Telecommunications and Information Administration grant of $626,956 towards a total project cost of $2,051,465 over 21 months FY 1996

Paul Mehne, UMDNJ, 401 Haddon Avenue, Camden, NJ 08103-1506 Phone 609-757-7751

NEW MEXICO

ALAMO NAVAJO SCHOOL BOARD, INC. The school board, in partnership with the Albuquerque Indian Hospital, will develop a two-way interactive video conferencing capability to connect the Alamo Health Center in Magdalena and the IHS s Albuquerque Indian Hospital, the two facilities being approximately 140 miles apart. The center provides basic health care, while seriously ill patients are referred elsewhere. The Alamo Health Center is 1 of 12 medical sites in the Albuquerque Services Unit. Primary health care providers will use the system to provide diagnostic services to the entire reservation community of 1,800. In addition, on-site secondary and postsecondary educational classes will be available through the system, which will

reduce cost and travel time for staff and students attending classes. This project develops the Albuquerque Indian Hospital as a hub, with the Alamo Health Center as a demonstration site. The Alamo Reservation is located 70 miles from Socorro, the nearest town of appreciable size.

National Telecommunications and Information Administration grant of $133,280 towards a total project cost of $212,666 FY 1997

Lynda Middleton, Administrative Assistant, Alamo Health Center, P.O. 907, Magdalena, NM 87825 Phone 505-854-2543

GUADALUPE COUNTY HOSPITAL CLINIC The Guadalupe County Hospital, located in rural eastern New Mexico, received two federal grants. The combined projects link the hospital and clinic to a regional medical center and the University of New Mexico. The system provides teleradiology, emergency, telecardiology, and primary and secondary care consultation. Continuing medical education is available for doctors, nurses, and other health care professionals. One funding purpose of the ORHP grant is to address clinical outreach efforts, health professional recruitment and retention, emergency medical services, human resource development, and continuing education. Primary care services are provided to individuals in a neighboring rural community and in project-developed, school-based clinics. Distance education nursing is being provided through the video conferencing system from Luna Vo-Tech. Consortium members include the hospital, the University of New Mexico School of Medicine and Nursing, and other community-based organizations.

Rural Utilities Service grant of $190,650 FY 1995

Office of Rural Health Policy three-year outreach grant of $299,626 FYs 1994 1996

Rose Contereas Taylor, Guadalupe County Hospital Clinic, 535 Lake Drive Box A, Santa Rosa, NM 88435 Phone 505-472-3417

NORTHERN NEW MEXICO COMMUNITY COLLEGE The college, located in Española, New Mexico, creates a model health information network for hospitals, physicians, clinics, nurses, and public health organizations. The project area includes Los Alamos, Santa Fe, Rio Arriba, Taos, San Miguel, Mora, Colfax, Harding, and Guadalupe Counties. Significant barriers to medical services are distance from larger providers and compromised patient medical record management standards. A virtual patient record system to be created on the Internet will allow records to remain at the clinic of origin. Los Alamos National Laboratory will develop extensive encryption and security measures. Anticipated system benefits include fewer patients arriving without referral information, fewer lost patient records, and reduced multiple and often incomplete records on a single patient.

National Telecommunications and Information Administration grant of $500,000 towards a total project cost of $1,011,870 over two years FY 1996

Jose Griego, Northern New Mexico Community College, 1002 North Onate Street, Español, NM 87532 Phone 505-747-2210

UNIVERSITY OF NEW MEXICO HEALTH SCIENCES CENTER (UNMHSC) The New Mexico Telemedicine Network is a consortium of 11 organizations in New Mexico, including two state universities, four rural hospitals, one rural clinic, a private medical group, a state public health district, and two community health councils. The consortium represents the natural expansion of a smaller telemedicine project that began at UNMHSC in 1995. Interactive video conferencing will link facilities at five sites: UNMHSC (Albuquerque), Guadalupe Health Sciences (Santa Rosa), Las Vegas Medical Center (Las Vegas), Chaves County Community Health Care Clinic (Roswell), and Eastern New Mexico Medical Center (Roswell). Pathology Consultants of New Mexico, a private medical group in Roswell, will also use store-and-forward technology to link with UNMHSC. Clinical services will be provided in emergency medicine, mental health, oncology, pathology, chemical dependency/substance abuse, pain management, rheumatology, and nephrology. The network will also be used for preceptor support at rural training sites and to deliver continuing education programs.

Office of Rural Health Policy/OAT three-year telemedicine grant. FY 1997 - $288,820

Emily Freede, University of New Mexico Health Sciences Center Telemedicine Program, 915 Camino De Salud Northeast, Basic Medical Services Building, Room B61, Albuquerque, NM 87131-5041 Phone 505-272-8623, Fax 505-272-0800, E-mail <efreede@unm.edu.>

Another UNMHSC project focuses on five underserved communities in rural New Mexico that have six major health-related problems. Grant funds are use to develop a multilevel, interactive telecommunications model project called TeleCommunity HELP Health Education Links Project. This project links community-based agencies with state and university health agencies. Two of the five communities will have intercommunity networks that connect health-related service providers, public schools, city and county extension offices, and TeleCommunity HELP personnel. The university s Health Science Center develops a health curriculum for the public schools.

National Telecommunications and Information Administration grant of $249,988 towards a total project cost of $529,647 FY 1995

Emily Freede, University of New Mexico Health Sciences Center Telemedicine Program, 915 Camino De Salud Northeast, Basic Medical Services Building, Room B61, Albuquerque, NM 87131-5041 Phone 505-272-8623, Fax 505-272-0800, and E-mail <efreede@unm.edu.>

NEW YORK

BETH ISRAEL MEDICAL CENTER, CHEMICAL DEPENDENCY INSTITUTE The Beth Israel Medical Center (BIMC) is a large drug treatment provider. This project implements a telemedicine system to enhance medical services in 23 Methadone Maintenance Treatment Program clinics across New York City. The primary application is the use of video conferencing to link nurses and paraprofessionals with senior physicians to ensure appropriate diagnosis and referral. Other applications include staff and patient education. BIMC broadcasts patient education programs to the 23 clinics over an Integrated System Data Network and

operates an Internet-based system. Computerized patient records are stored on a database accessible to the clinics.

National Telecommunications and Information Administration grant of $650,000 towards a total project cost of $1,369,904 FY 1995

Nina Peyser, Beth Israel Medical Center, Chemical Dependency Institute, 215 Park Avenue South, 15th Floor, New York, NY 10003 Phone 212-387-3883

CITY UNIVERSITY OF NEW YORK The City University of New York, in partnership with the New York Academy of Medicine, the New York Metropolitan Research and Reference Library Agency s Hospital Library Services Program, and the New York Public Library, works with local voluntary health agencies, support groups, and commercial vendors to demonstrate the effectiveness of an Internet-based consumer health information network to serve residents of New York City and lower Westchester County, New York. Citizens are able to access the network from public workstations located in libraries, colleges, hospitals, and other locations. The network provides access to databases on breast cancer, AIDS, and other diseases. A directory of community services, a bulletin board for public health announcements, a health and drug information library, and other services will also be available in English and Spanish.

National Telecommunications and Information Administration grant of $275,000 towards a total project cost of $559,150 FY 1994

Marsha Ra, City University of New York, 555 West 57th Street, 16th Floor, New York, NY 10009 Phone 212-541-0369

COLUMBIA UNIVERSITY, DEPARTMENT OF MEDICAL INFORMATICS The Department of Medical Informatics has two NLM research contracts. The first project uses technology to provide home patients with information to improve disease prevention activities and manage chronic illnesses. Patients receive alerts and reminders when standards of care (immunization, diabetes management, asthma control, etc.) are not being achieved. Patients enter data (blood pressure, glucose levels, pulmonary function test results, etc.) into an electronic medical record, using applications that run on home-based personal computers connected to the National Information Infrastructure. These patients are able to communicate with health care providers, review their medical records, and receive desired information addressing their specific health care concerns. The project demonstrates techniques to safeguard the confidentiality of personal health care records that are stored and transmitted electronically, and evaluates the impact of patient use of information acquired through the National Information Infrastructure.

National Library of Medicine research contract amount unavailable. Performance period is September 30, 1996, to September 29, 1999.

Soumitra Sengupta, Ph.D., Columbia University, Department of Medical Informatics, 161 Fort Washington Avenue, Mail Code AP13 1310, New York, NY 10032 Phone 212-305-7035

The second project is a collaboration between three medical informatics research groups (Leland Stanford Junior University, Columbia University, and Brigham and Women s Hospital)

to build Internet-accessible shared systems that support computerized patient records, clinical research protocols, medical vocabulary servers, teleconferencing, and health professions education. Leland Stanford Junior College and Brigham and Women s Hospital share $638,000 for related efforts.

National Library of Medicine estimated contract amount of $1,036,223 Performance period is May 1994 to April 30, 1997.

James Cimino, Department of Medical Informatics, 161 Fort Washington Avenue, Mail Code AP13 1310, New York, NY 10032 Phone 212-305-8127

COLUMBIA UNIVERSITY, PRESBYTERIAN MEDICAL CENTER Columbia University Presbyterian Medical Center, the New York City Department of Health, and the Visiting Nurse Service of New York collaborate to develop and demonstrate an information infrastructure to coordinate services to tuberculosis (TB) patients in their homes, doctor s offices, or the hospital. The project uses automated decision-support systems, networks, interactive wireless hand-held computers, and natural language processing technology to coordinate the many providers of care for TB patients. It also ensures that appropriate TB protocols are followed, develops an infrastructure that could be used in the treatment of other diseases, and demonstrates how electronic medical records can meet high standards of privacy and confidentiality.

National Telecommunications and Information Administration grant of $733,424 towards a total project cost of $2,576,521 FY 1994

George Hrispcsak, 161 Fort Washington Avenue, BAP 1310, New York, NY 10032 Phone 212-305-5712

MARY IMOGENE BASSETT HOSPITAL The Bassett Health Care system encompasses a rural tertiary care teaching hospital (Mary Imogene Bassett Hospital), 2 rural community hospitals, and 19 rural outreach Centers in central New York in a region approximately the size of the state of Connecticut. The system uses a range of technologies from video conferencing to still-image transfer. Among the projects being evaluated are nutritionist-patient consultations between the hub and regional sites; follow-up visits for gynecological surgery inpatients between the hub and a community hospital; vascular wound care, including home visits; and development of screening tests using both video conferencing (at two different transmission rates) and still-image transfer between a distance non-Bassett facility and hub hospital. The foundation for Bassett Health Care s telemedicine system was created with a grant from RUS, with continued expansion from other funding sources and internal support. Funds from the ORHP s Rural Telemedicine Grant Program are being used primarily for operating and evaluating the project. This project is included as a component of the ORHP/OAT s national evaluation of telemedicine.

Rural Utilities Service grant of $494,755 FY 1993

Office of Rural Health Policy three-year telemedicine grant of $1,035,485 FYs 1994 1996

Martha Gorman, Mary Imogene Bassett Hospital, One Atwell Road, Cooperstown, NY 13326 Phone 607-547-3917, Fax 607-547-3061, E-mail <telemed@telenet.net>

PLANNED PARENTHOOD FEDERATION OF AMERICA, INC. The Planned Parenthood Federation of America (PPFA), Inc., project designs a national prototype of an online information system to collect and exchange data on reproductive health care. After testing the system for more than one year in selected Planned Parenthood sites, PPFA will implement the system in all 164 PPFA affiliates, which manage 919 clinics. Primary data and information on reproductive issues and health care in Planned Parenthood clinics across the nation then will be made available online to health care researchers, health care providers, policymakers, and federal and state health care agencies.

National Telecommunications and Information Administration grant of $294,390 towards a total project cost of $594,994 FY 1994

Kevin MacEvlly, Planned Parenthood Federation of American, Inc., 810 7th Avenue, New York, NY 10019 Phone 212-261-4641

WESTERN NEW YORK RURAL HEALTH CARE ASSOCIATION This project connects six hospitals in four counties that are a part of a health care complex to a consortium of eight Buffalo area hospitals to enhance primary and emergency health care services and training. Supplemental funds were provided by the Appalachian Regional Commission (ARC) because this consortium could collectively provide advance medical services to smaller hospitals within the Appalachian Region that have difficulty attracting and retaining health care professionals, providing emergency medical services, and remaining economically viable. ARC provided supplemental funds of $182,114.

Rural Utilities Service grant of $243,000 FY 1994

William Pike, Western New York Rural Health Care Association, 1876 Niagara Boulevard, Towandana, NY 14150 Phone 716-695-0843

NORTH CAROLINA

EAST CAROLINA UNIVERSITY SCHOOL OF MEDICINE The East Carolina University (ECU) Rural Eastern Carolina Health Network (REACH-TV) currently connects ECU s tertiary care medical center to 11 interactive conference and clinical T-1 video sites in five rural hospitals, a rural health center, a prison, and three store-and-forward sites in rural physician practices. The network is expanding to include a distributed network of two home health services using plain old telephone systems (POTS); seven single-line Integrated System Data Network (ISDN) sites linking five schools to a pediatrician, health department, and mental health center; and four single-line ISDN sites linking three other community mental health units and a community inpatient psychiatric unit. All distributed sites are linked to the ECU hub. The network has been operational since 1992. Interactive video hub and spoke sites use T-1 connections, Compression Labs Incorporated (CLI) video units, AMX control systems, three chip cameras in the clinical rooms, and a variety of clinical tools. Store-and-forward sites are MedVision and Picasso phone. The home health network is a POTS video phone, and the school and mental health networks are ProShare computer-based ISDN connections.

REACH-TV provides physician consultation in all medical specialties and emergency medicine. Consultation is provided by nonphysician health care professionals for diabetic care, physical rehabilitation, speech pathology, pharmacy, and mental health services. Direct primary care is provided to patients in the distributed network. The network is also used extensively for supervision of students, residents, physician assistants, and nurse practitioners, and for interdisciplinary training. Continuing education for all regional health professionals, health professions degree course work, and administrative conferencing also occurs. A school-based telehealth project links to three high schools to provide health education and health care information.

East Carolina University participates in a HCFA pilot demonstration project that allows physicians to be reimbursed for telemedicine consultations. The HCFA pilot also studies (1) the impact of telemedicine on the quality of and access to care in rural areas of the state, including utilization rates, costs, and the appropriateness of various specialty services for rural telemedicine; and (2) diagnostic effectiveness, payment methodologies, and the effect of presenting provider type on the clinical and educational value of teleconsultation.

Health Care Financing Administration multiyear grant of approximately $635,366 FY 1994 1997

Office of Rural Health Policy three-year telemedicine grant of $1,388,179 FYs 1994 1996

Office of Rural Health Policy/OAT three-year telemedicine grant. FY 1997 - $321,675

Ted Kummer, East Carolina University, P.O. Box 7224, Greenville, NC 27858 Phone 919-816-2476, Fax 919-816-2495, E-Mail <tkummer@brody.med.ecu.edu>

MOUNTAIN AREA HEALTH EDUCATION CENTER, INC. This four-county project serves some of the most isolated rural, underserved county areas in North Carolina. The project funds distance education in the form of continuing medical education and continuing education for rural health and mental health professionals. The network supports collaborative community meetings to address locally identified health needs. It links health and mental health agencies, as well as hospitals in the region, to address regional health care delivery issues. The service area includes the counties of Cherokee, Clay, Graham, and Swain.

Rural Utilities Service grant of $70,305, with a $42,795 loan FY 1997

David Blanchard-Reid, Mountain Area Health Education Center, Inc., 501 Biltmore Avenue, Asheville, SC 28801 Phone 704-257-4439, Fax 704-258-2099

NORTH CAROLINA OFFICE OF STATE PLANNING The state of North Carolina links emergency departments of each of the state s four medical centers affiliated with medical schools (North Carolina Baptist Hospital/Bowman Gray, Duke University Medical Center, Pitt Memorial County Hospital/East Carolina University, and University of North Carolina Hospital) with five remote site hospital emergency departments, including a military base hospital. The link allows the medical centers to provide teleconsultations (including general trauma consults, as well as teleradiology consults such as X-rays and CAT scans) during

emergency situations. The project uses the broadband, asynchronous transfer mode ATM/SONET-based North Carolina Information Highway to connect the sites.

National Telecommunications and Information Administration grant of $550,000 towards a total project cost of $2,393,140 FY 1994

Gail Fitzgerald, Office of Planning, 116 West Jones Street, Room 5050, Raleigh, NC 27603-8003 Phone 919-966-2188

UNIVERSITY OF NORTH CAROLINA, CHAPEL HILL The North Carolina Rural Telemedicine System (NC-RTS) utilizes ATM over the North Carolina Information Highway to link county providers in Halifax and Northampton Counties and the University of North Carolina at Chapel Hill. Building on seven years of rural-based interdisciplinary geriatric assessment, the NC-RTS supports interactive video consultations and multimedia data sharing among the four sites (a major university, a rural clinic, a rural long-term care facility, and a rural regional hospital). The NC-RTS links clinical sites through an information highway and creates a regional system of health care that maximizes system capacity and expands the diversity of services by sharing resources among participants. Based on an assessment of community needs, sessions focus on mental health concerns, chronic illness management, and preventive care. Interdisciplinary team activities occurring over the NC-RTS have suggested significant potential benefits in replacing serial dyadic encounters with simultaneous, collaborative discussions. The project is also exploring the specific technical and environmental attributes that influence the psychology of clinical interactions.

Office of Rural Health Policy three-year telemedicine grant of $1,354,615 FYs 1994 1996

Carol Stevens, University of North Carolina, Chapel Hill, CB 7550, 141 MacNider Building, Chapel Hill, NC 27599-7550 Phone 919-966-5945

UNIVERSITY OF NORTH CAROLINA, WILMINGTON This project funds a consortium to provide extension education programs to Bladen, Brunswick, and James Sprunt Community Colleges located in southeastern North Carolina. The programs emanate from the University of Carolina at Wilmington. Specifically, the funds will be used to connect the colleges to the North Carolina Information Highway, which provides medical services and economic opportunities for distant areas. The service area includes Bladen, Brunswick, and Duplin Counties.

Rural Utilities Service grant of $261,295 FY 1997

Pamela Whitlock, University of North Carolina, Wilmington, NC Phone 910-962-3167, Fax 910-962-7249

WESTERN NORTH CAROLINA RURAL PRIMARY CARE SUPPORT NETWORK This regional network serves a 15-county rural, mountainous Appalachian region. This project creates a primary care support network, recruits new physicians and supports existing ones, and provides technical support to communities to enable them to better address their health problems. Activities include a Rural Fellowship Program to orient and prepare prospective rural physicians for rural practice and a locum tenens program that allows current rural physicians time away for

continuing education. In addition, a telecommunications system is deployed to provide access to educational opportunities and specialty consultations. Community volunteers are trained to help rural communities identify and address local health issues. Consortium members include the urban Margaret R. Pardee Memorial Hospital, the Mountain Area Health Education Center, two rural hospitals, and three rural practices.

Office of Rural Health Policy three-year outreach grant. FYs 1996 1997 - $581,394

Frank Aaron, Margaret R. Pardee Memorial Hospital, 715 Fleming Street, Hendersonville, NC 28739 Phone 704-696-1131

NORTH DAKOTA

EVANGELICAL LUTHERAN GOOD SAMARITAN SOCIETY This project links seven nursing and long-term care facilities to a regional medical hub serving rural underserved areas in western North Dakota. The telemedicine program involves the use of a digital communications network, advanced PC workstations, clinical applications, and advanced digital instruments to support remote examination, diagnosis, certain testing, consultations, medical supervision, case management, staff education, and specialty care.

Rural Utilities Service grant of $330,000 FY 1997 (Fund for Rural America; project was submitted in FY 1996 as a distance learning and telemedicine grant application)

Jim Beddow, Executive Director, Interim CEO Evangelical Lutheran Good Samaritan Society, 4800 West 57th, Sioux Falls, SD 57117 Phone 605-362-3100 (Administered by South Dakota office)

MEDCENTER ONE HEALTH SYSTEMS, INC. Under an RUS grant, three health care sites are equipped with advanced telecommunications, including full motion, interactive video links. The sites are capable of providing 24-hour emergency medical and trauma consulting, mental health services, and educational programming.

Under an NTIA grant, Medcenter services are expanded to veterans and Native American veteran populations living in North Dakota. The project demonstrates an innovative way to improve veterans access to health care by using an effective and cost-efficient health care system that combines 45 primary care clinics and facilities in local communities across the state with 11 telemedicine sites. Teleconsultations occur between these 11 sites and the three hub sites on the Dakota Telemedicine System (DTS) network Minot and Bismarck hospitals and the Fargo Veterans Administration Medical Center. Video teleconferencing technology reduces travel costs and provides patient emergency care, health education, and consult with health care providers concerning wellness and mental health programs. The IHS units located at Turtle Mountain and Standing Rock benefit from the network. Other components were funded by RUS. The 1997 grant will be used to purchase video conferencing systems for Jacobson Memorial Hospital in Elgin, Richardton Health Center in Richardton, and McKenzie County Hospital in Watford City.

National Telecommunications and Information Administration grant of $400,000 towards a total project cost of $2,032,375 over two years FY 1996

Rural Utilities Service grant of $316,968 in FY 1994 and $300,000 in FY 1997 (Funds for Rural America based on an application submitted in FY 1996 for a distance learning and telemedicine grant)

Carla Anderson, Medcenter One Health System, 300 North 7th Street, Bismarck, ND 58606-5525 Phone 701-221-5616

NORTH DAKOTA HOSPITAL RESEARCH AND EDUCATION FOUNDATION This new 1997 project addresses a licensed practical nursing shortage in northeastern North Dakota. Project TRANSCENDS will use distance education technologies and other distance-free education modalities to provide access for rural individuals, including Spirit Lake Sioux and Turtle Mountain Chippewa Reservation residents, to an Associate of Applied Science in Practical Nursing Program. Educational institutions will work collaboratively to provide general education courses to accommodate rural working students, and a technical college will use distance-free education modalities, including laptop-assisted instruction, on-site faculty instruction, and interactive video-based technologies, to deliver nursing course work. On-site field counselor support services will be provided and the nursing education curriculum enhanced to foster cultural competence. The network is comprised of three educational institutions Cankdeska Cikana Community College (a tribally chartered community college), the University of North Dakota-Lake Region, and Northwest Technical College along with two nursing educational programs North Dakota Ladders in Nursing Careers (LINC) and the Recruitment/Retention of American Indians in Nursing (RAIN) Program at the University of North Dakota.

Office of Rural Health Policy three-year outreach grant. FY 1997 - $184,727

Shireen Holloway-Hoff, North Dakota Hospital Research and Education Foundation, North Dakota Project LINC, 1830 Eight Street Southwest, Minot, ND 58701 Phone 701-838-8062, Fax 701-838-5396

NORTHLAND HEALTH CARE ALLIANCE Using interactive video conferencing, the Northland TeleCare Network connects 15 sites 11 hospitals/clinics and 4 long-term care facilities. The network has been operational since July 1996. The TeleCare Network uses NEC TeleDoc 5000 units, an interactive technology. Each spoke site will have a unit, with consultation units at four hub sites. Current and proposed network members will have consultative access through telemedicine to physicians and other clinicians in over 20 specialties, including cardiology, orthopedics, dermatology, emergency medicine, neurology, obstetrics, mental health, pediatrics, wound management, meal planning, and speech pathology. The system will also be used for consultations with allied health professionals and for administrative meetings, distance education, hospice care conferences, employee assistance sessions, and supervision of physician extenders.

Office of Rural Health Policy three-year telemedicine grant. FY 1997 - $231,346

Tim Cox, Northland Health Care Alliance, 400 East Broadway, Suite 609, Bismarck, ND 58501 Phone 701-250-0709, Fax 701-250-0739, E-mail <tcox@btigate.com>

WEST RIVER HEALTH SERVICES This project creates a medical link for teleradiology and a computer information network. West River Health Services is a 46-bed regional medical center serving a 15,000-square-mile area in southwest North Dakota and northwest South Dakota. Patients medical records and other information related to medical procedures are stored, transported, and accessed through the digital network. Several laptop computers are used to transmit medical data from the home health nurse back to the hospital. A multitiered transmission pathway incorporating T-1, 56K (switched 56), and ISDN will be used.

Rural Utilities Service grant of $300,000 FY 1994

Jim Long, Regional Medical Center, West River Health Services, Route 1 Box 124, Hettinger, ND 58639 Phone 701-567-4561

OHIO

ADAMS COUNTY HOSPITAL This project links the Adams County Hospital and four high schools to the University of Cincinnati Medical Center. The system provides health care professionals, teachers, students, and other rural residents with access to a wide range of continuing education and advanced placement college courses. Other medical services include trauma care, follow-up diagnostic and evaluative consultations, and emergency medical consultations 24 hours a day.

Rural Utilities Service grant of $349,700 FY 1995

Philip Hannan, Adams County Hospital, 210 North Wilson Drive, West Union, OH 45693 Phone 937-544-5571

OAK HILL COMMUNITY MEDICAL CENTER, INC. This program establishes a county-wide health care delivery network organized as a consortium to coordinate and integrate resources from current providers. Some of the new and/or enhanced services that are offered include primary care, medications, tuberculosis screenings, dental services, dietary counseling, teleradiography, and electronic sharing of patient files. The project serves the community, with emphasis on elderly, low-income, and uninsured residents. The five entities comprising the consortium include the rural hospital, the county health department, a rural clinic, a senior citizens group, and a community action group.

Office of Rural Health Policy three-year grant of $600,000 FYs 1995 1996

Michelle Boggs, Oak Hill Community Medical Center, Inc., 350 Charlotte Avenue, Oak Hill, OH 45656 Phone 614-682-7717

OHIO UNIVERSITY, COLLEGE OF OSTEOPATHIC MEDICINE The College of Osteopathic Medicine project creates a rural health information network that will provide health care

professionals access to two-way video interactive telecommunications. This network uses two-way compressed video communications technologies among health care providers in rural southeast Ohio and sets up partnerships with public and private communications infrastructure service providers and health care professionals in rural, underserved communities. Ohio University will provide educational resources from its College of Osteopathic Medicine and Consortium for Health Education in Appalachian, Ohio.

Rural Utilities Service grant of $325,837 FY 1997 (Project submitted in FY 1996 as a distance learning and telemedicine grant application)

Chris Duffrin, Grants Officer, College of Osteopathic Medicine, 307 Grosvenor Hall, Ohio University, Athens, OH 45701 Phone 614-593-9580

UNIVERSITY OF CINCINNATI MEDICAL CENTER The University of Cincinnati Medical Center provides access to health information for citizens of the Ohio Valley. Information on prescription drugs, diseases, wellness and general health, alternative therapies, insurance, and physician referrals is available through the Internet, and though regional online service providers and other channels. Anyone with a home computer or access to a public workstation in the tri-state region has access to the information. Public workstations are placed in public libraries, health clinics, hospital waiting rooms, and pharmacies.

National Telecommunications and Information Administration grant of $498,556 towards a total project cost of $984,598 FY 1994

J. Roger Guard, University of Cincinnati Medical Center, Information Technology and Library, P.O. Box 670574, Cincinnati, OH 45267-0574 Phone 513-558-5656

OKLAHOMA

CHOCTAW NATION INDIAN HOSPITAL This project connects the rural Choctaw Nation Indian Hospital with three clinics in Broken Bow, McAlester, and Hugo. The hospital and clinics will use local area networks and a wide area network to provide video conferencing to physicians and other health care providers. Video conferencing with teleradiology components allows the four sites to connect patients, local physicians, and remote specialists and send X-ray images for analysis. The service area includes Broken Bow, Choctaw, Hugo, Lefore, McAlester, McCurtain, Pittsburg, and Talihina Counties.

Rural Utilities Service grant of $198,352 FY 1997

Rosemary Hooser, Choctaw Nation Indian Hospital, Route 2, Box 725, Talihina, OK 74571 Phone 918-567-2211, Fax 918-567-2631

COMANCHE COUNTY MEMORIAL HOSPITAL The Comanche County Memorial Hospital in Lawton, Oklahoma, and First Health West, a rural HMO, implements a T-1 network connecting eight hospitals in rural southwestern Oklahoma to provide telemedicine services. Project components include (1) development and provision of cardiology, radiology, and pathology support services; (2) provision of patient and financial information management tools; and (3)

provision of continuing education and technical support to isolated rural physicians and other clinical professionals.

National Telecommunications and Information Administration grant of $496,637 towards a total project cost of $993,275 FY 1995

Dwayne Patrick, Comanche County Memorial Hospital, P.O. Box 129, Lawton, OK 73502 Phone 405-355-8620

HOLDENVILLE GENERAL HOSPITAL Holdenville General Hospital is a 36-bed, municipally owned hospital serving a predominately elderly and low-income population in southeastern Oklahoma. The hospital s service area has a diagnosed diabetic population that is 12 times higher than the national average. Rural residents currently travel 180 to 240 miles round trip to larger cities to see specialists. This grant allows Holdenville General Hospital to transform its present Outpatient Specialty Department into a telemedicine clinic and to bring its teleradiology service online with Tulsa-based physicians. The service area includes Huges, Seminole, and Pontotoc Counties.

Rural Utilities Service grant of $125,519 FY 1997

Melissa Mc Clellan, Holdenville General Hospital, 100 Crestview Drive, Holdenville, OK 74848 Phone 405-379-4172, Fax 405-379-4171

INTEGRIS HEALTH, INC. INTEGRIS Baptist Medical Center, a 508-bed multispecialty tertiary facility, will serve as a hub site for southeastern Oklahoma rural facilities. It will link with 52-bed Choctaw Memorial Hospital and the Boswell Rural Health Clinic, as well as with a mobile clinic serving remote sites in Rattan, Ft. Towson, Soper, and Bennington, Oklahoma. The network will use both T-1 interactive video connection and store-and-forward technology. The hub at INTEGRIS Baptist Medical Center will provide emergency medicine coverage to the spoke utilizing VTEL Friendly Rollabouts Engineered for Doctors and American Medical Devices (AMD) telemedicine peripherals at the Choctaw Memorial spoke. Specialty consults will be available January 1998 in cardiology, nephrology, dermatology, urology, pediatrics, neurology, and internal medicine.

Office of Rural Health Policy three-year telemedicine grant. FY 1997 - $175,066

Cynthia Scheidemand-Miller, INTEGRIS Health, Inc., 3300 Northwest Expressway, Department 110-7470, Oklahoma City, OK 73112 Phone 405-951-2933, Fax 405-951-4119, E-mail <schecl@integris-health>

OKLAHOMA CITY-COUNTY HEALTH DEPARTMENT The Oklahoma City-County Health Department plans improvements to its surveillance and data systems. Objectives for an improved system will include (1) the ability for users to interconnect among different network systems; (2) the establishment of new network capabilities and interconnections; and (3) the establishment of a common database of demographic and geographic information that allows for surveillance of health risk factors, epidemiological studies, disease control, and health promotion in the community.

National Telecommunication and Information Administration grant of $128,970 towards a total project cost of $276,748 FY 1995

Bob Jamison, City-County Health Department of Oklahoma County, 921 Northeast 23rd, Oklahoma City, OK 73105 Phone 405-425-4332

STILLWATER MEDICAL CENTER This project links four rural hospitals to provide consultative, diagnostic, and teleradiology services to residents in eastern Oklahoma.

Rural Utilities Service grant of $67,000 FY 1995

Rosa Lee Merz, Stillwater Medical Center, 1323 West 6th Avenue, Stillwater, OK 74074 Phone 405-742-5481

WHEATLAND RESOURCE CONSERVATION AND DEVELOPMENT OFFICE The Wheatland Resource Conservation and Development Office is headquarters for a 10-county grassroots community effort. This project connects rural schools to the University of Oklahoma and to Oklahoma State University and two medical centers. It provides access to training in health care, public safety, adult education, and teacher-sharing for grades K 12.

Rural Utilities Service grant of $222,552 towards a total project cost of $3.2 million FY 1995

Carl Smith, Wheatland Resource Conservation and Development Office, 1216 West Willow, Suite E, Enid, OK 73707 Phone 405-234-8331

OREGON

LA GRANDE RONDE HOSPITAL This project links the La Grande Ronde Hospital to Wallowa Memorial Hospital, regional medical centers, and Oregon State University to provide diagnostic teleradiology services from urban medical centers to isolated rural areas. Besides improved patient care, timely radiology procedures may increase hospital revenues, as fewer patients will select alternative care facilities.

Rural Utilities Service grant of $168,430 FY 1995

Troy Juniper, La Grande Ronde Hospital, 900 Sunset Drive, P.O. Box 3290, La Grande, OR 97850 Phone 541-963-1465

NORTHWEST PORTLAND AREA INDIAN HEALTH BOARD This grant funds a regional health board project called Circle of Health: Information Infrastructure for the Northwest Tribes. The project facilitates disease surveillance and the collection and analysis of epidemiology information in geographically remote tribal communities in the Pacific Northwest. Working with tribes, state health departments, and IHS, the Circle of Health project will connect eight tribal health facilities to the IHS, the Washington State Network, and the Internet, and will allow Washington tribes to use an electronic communicable disease reporting system. The project reinstates a regional service eliminated in 1995 by such causes as IHS downsizing and

discontinuing of regional programs. Project partners include the Northwest Portland Area Indian Health Board and eventually more than 40 tribes in the states of Oregon, Washington, and Idaho.

National Telecommunications and Information Administration grant of $625,045 towards a total project cost of $1,502,950 over 24 months FY 1997

Doni Wilder, Executive Director, Northwest Portland Area Indian Health Board, 520 Southwest Harrison Street, Suite 400, Portland, OR 97201 Phone 503-228-4185, Fax 503-228-8182

OREGON HEALTH SCIENCES UNIVERSITY This project demonstrates that high-speed computers and networks can dramatically improve routine dermatology diagnosis. The research effort involves the specification and design of an economical and useful teledermatology system in rural areas, based on the dermatology knowledge of primary care physicians. An imaging and transmission system is installed in at least three primary care clinics in rural Oregon, which collectively service over a dozen primary care physicians. Researchers periodically reevaluate the dermatology knowledge of the participating physicians.

National Library of Medicine estimated contract amount of $2,769,226 Performance period is October 1, 1996, to December 31, 1997. Extension of prior award.

Douglas Perednia, M.D., Oregon Health Sciences University, 3181 Southwest Sam Jackson Park Road, Portland, OR 97201 Phone 503-494-6846

OREGON STATE OFFICES FOR SERVICES TO CHILDREN AND FAMILIES Oregon s State Offices for Services to Children and Families will implement a statewide image communications system to transmit medical images over standard telephone lines. This project is important because medical providers are reluctant to evaluate suspected child abuse without professional support, as a misdiagnosis of abuse can have significant repercussions not only for the providers, but also for the child and the alleged perpetrator. Also, the nature of child abuse requires that medical providers have immediate access to consultation services. With this system, a health care provider in a remote area of the state can consult with qualified medical experts on suspected child abuse cases. The network includes three consulting sites, with referring sites throughout the state. The telecommunications system will operate with standard computer hardware and will transmit and receive telemedical images by modem over a standard telephone system. The remote physician will use a colposcope, similar to a small microscope, to take magnified pictures of areas of a child s body. An image of the selected area is created from a number of image sources, such as video camera or 35mm film. Still video images are then transferred into a software system, Second Opinion Software, and transmitted to a qualified expert at a consulting site. This project is a relatively inexpensive solution not only to gaining access to experts for consultation purposes, but also to applying existing technology similar to that used in radiology, oncology, and dermatology to child abuse evaluations. Project partners include CARES NW, the KIDS Center, Lane County Child Advocacy Center, Josephine Child Advocacy Center, Jackson Child Advocacy Center, Douglas House, Lincoln County Child Advocacy Center, Guardian Care Center, Juliette s House, Mayer House, and Liberty House.

National Telecommunications and Information Administration grant of $108,200 towards a total project cost of $232,909 over 24 months FY 1997

Janvier Slick, Protective Services and Family Based Services Unit, HRB 2nd floor, 500 Summers Street NE, Salem, OR 97310 Phone 503-945-5691

ST. CHARLES MEDICAL CENTER FOUNDATION Central Oregon Hospital Network s (CONet s) member hospitals are working collaboratively to provide rural and central Oregonians with access to quality health care options. St. Charles Medical Center Foundation, in partnership with CONet, provides health care services to a rural, sparsely populated region of seven small, unique communities isolated by geographical distance, mountainous terrain, and correspondingly challenging winter weather conditions. Grant funds will be used to develop video and computer conferencing capabilities and will give patients and physicians important new resources with which to address rural health care access. Direct benefits of the network will include telemedicine care, electronic medical information access, continuing health education, and community access in the rural setting.

Rural Utilities Service grant of $330,000 FY 1997 (Fund for Rural America; project submitted in FY 1996 as a distance learning and telemedicine grant application)

Sue Mott, Development Associate, St. Charles Medical Center, 2500 Northeast Nessf, Bend, OR 97701 Phone 541-382-4321

WARM SPRINGS HEALTH AND WELLNESS CENTER The center s telemedicine activities involve the IHS facility serving the Warm Springs Reservation. Agency costs are estimated at $4,500 in telemedicine equipment.

Russ Alger, Warm Springs Health and Wellness Center, 1270 Ko-Num Road, P.O. Box 1209, Warm Springs, OR 97761 Phone 541-553-2461

PENNSYLVANIA

ALLEGHENY-SINGER RESEARCH INSTITUTE The Allegheny Health, Education and Research Foundation (AHERF), a statewide integrated academic health system, uses grant funds to enhance its telemedicine health care applications through an advanced telecommunications network for real-time sharing of medical information among urban-rural partners. Technology applications include remote diagnosis, medical image distribution, continuing medical education, support of rural physicians and medical students at multiple sites, and access to an online medical research and library and to E-mail and Internet.

National Telecommunications and Information Administration grant of $450,000 towards a total project cost of $1,128,960 FY 1995

Darlene Campeau, Allegheny-Singer Research Institute, 320 East North Avenue, Pittsburgh, PA 15212 Phone 412-359-1529

COMMONWEALTH OF PENNSYLVANIA The Commonwealth of Pennsylvania project develops the Keystone State Desktop Medical Conferencing Network (KEYNET) as part of the Pennsylvania Rural Health Telecommunications Network. Using PC-based multimedia capabilities, KEYNET links physicians in rural/remote areas with resources in urban areas. These resources include both consulting physicians and various information sources such as medical libraries and databases. This project relies on the use of ISDN telecommunication links and personal computer desktop video equipment. Partners in the project include the Governor s Office, the State Department of Health, three tertiary care facilities, a rural hub site, and 10 rural physicians from Potter County.

National Telecommunications and Information Administration grant of $379,302 towards a total project cost of $762,905 FY 1994

George White, Commonwealth of Pennsylvania, 204 Finance Building, Harrisburg, PA 17120 Phone 717-787-7086

PENNSYLVANIA STATE UNIVERSITY Pennsylvania State University, along with its partners, provides home health services to insulin-dependent diabetics in Philadelphia County, Pennsylvania, under a project called TELEHEALTH. Approximately 200,000 adults in the Philadelphia metropolitan area of four million have diabetes. TELEHEALTH delivers video, voice, and data over telephone lines, linking clinician/nurse stations to patient stations. The TELEHEALTH system electronically captures and transmits vital medical data while simultaneously providing remote visual and oral interactive assessment of the patient. The nurse stations permit interactive communication between the nurse and patient; display recent recordings of patient vital signs; allow the nurse to download instruction videos, text messages, and audio clips to the patient station; and provide the nurse with visual prompts for performing assessments, patient teaching, and visit documentation. The patient stations allow interactive communication with nurses and with noninvasive devices, which are cable-connected to the stations. The patient s vital signs (blood pressure, pulse measurements, temperature) will be captured and transmitted in real time. Patient stations will allow patients to know when to take medication and will record that the medicine tray was accessed and the pill taken. Project partners include Pennsylvania State University, the Visiting Nurse Association of Greater Philadelphia, and Tevital, Inc., with support provided in comparing project outcomes with traditional home health patients.

National Telecommunications and Information Administration grant of $603,610 towards a total project cost of $1,272,482 over 24 months FY 1997

Kathryn Dansky Phone 814-863-2902

UNIVERSITY OF PITTSBURGH The University of Pittsburgh creates a medical link to four rural hospitals in northwest Pennsylvania for diagnostic, advisory, and educational concerns. The state of Pennsylvania funds corresponding equipment at other sites. The university increases medical student rotations and field placements in rural health.

Rural Utilities Service grant of $320,000 FY 1994

Michael Crouch, Office of Research, University of Pittsburgh, 350 Thackeray Hall, Pittsburgh, PA 15260 Phone 412-624-7405

In addition, the university participates in two NLM research projects. One project extends prior work to evaluate the clinical utility of a multimedia clinical information system at the University of Pittsburgh Cancer Institute. Currently, the system can acquire, compress, store, retrieve, display, and manipulate many kinds of clinical images, including radiographs, CAT scans, nuclear medicine studies, gastrointestinal endoscopy images, EKGs, and microscopic pathology. These images are linked, in real time, with a wide range of clinical reports stored in the University of Pittsburgh Medical Center s electronic medical record system. The project will study the effect of integrated access to clinical images and textual patient data on the length of time required to diagnose cancer and on the management of cancer treatment.

National Library of Medicine estimated contact amount $1,199,134. Performance period is October 1, 1996, to August 31, 1998. Extension of prior award.

Henry J. Lowe, M.D., University of Pittsburgh Medical Informatics, B850A Lothrop Hall, Pittsburgh, PA 15261 Phone 412-648-3190, Internet website <http://www.cml.upmc.edu>

The second NLM research project implements a teleradiography enhanced consultation service between the University of Pittsburgh Medical Center and six rural western Pennsylvania hospitals. The project examines the application of high-performance computing and communications technologies. Specific evaluation areas include diagnostic accuracy, level of improved care prior to transfer or referral, time to action, and ability to reduce unnecessary transfers and to make better decisions as to transfer method (car, ambulance, or helicopter).

National Library of Medicine estimated contract amount of $2,401,608. Performance period is April 1994, to March 1997.

Howard Yonas, University of Pittsburgh, 200 Lothrop Street, Suite 400B, Pittsburgh, PA 15213-2582 Phone 412-647-6360

SOUTH CAROLINA

GREENVILLE HOSPITAL The Greenville Hospital Home Health Telecommunications project enables physicians and nurses to expand their primary care capabilities with mobile equipment for in-home visits. The hospital uses a mobile van equipped with state-of-the-art medical equipment to follow up on postsurgical wound patients and other patients needing routine medical services. The hospital is able to use standard telephones to facilitate televideo physician consultations and to transport vital data on patients.

Appalachian Regional Commission grant of $154,011 FY unavailable

Donna Millar, Administrator, Greenville Hospital, 701 Grove Road, Greenville, SC 29605 Phone 864-455-7002, Fax 864-455-8443

RICHLAND MEMORIAL HOSPITAL This project expands an existing telemedicine communications system to other areas in Fairfield and Kershaw Counties. The hub of the expanded network is located at the Richland Memorial Hospital and is tied into the communications backbone of the University of South Carolina and its School of Medicine. Network services include teleconsultations for emergency medicine, pediatrics, obstetrics and gynecology, psychiatry, cardiology, hematology/oncology, and dermatology. Educational programs include nursing, continuing medical education, and a family medicine resident program.

Rural Utilities Service grant of $423,648 FY 1994

Kaster Freeman, President, Richland Memorial Hospital, 5 Richland Medical Park, Columbia, SC 29203 Phone 803-434-7000

UNIVERSITY OF SOUTH CAROLINA SCHOOL OF MEDICINE The School of Medicine is a community-based medical school which does not operate its own hospital. The grant funds a telemedicine network in the Williamsburg/Lake City Enterprise Zone that will both provide access to health care services for the communities and offer medical training as part of the university s efforts to bring physicians to medically underserved rural communities. Project partners include two hospital systems Richland Memorial Hospital in Columbia and Carolinas Hospital in Florence. The network allows live two-way interactive video between the hospitals, with education links for clinical conferences.

Rural Utilities Service grant of $349,200 FY 1997 (Fund for Rural America; project submitted in FY 1996 as a distance learning and telemedicine grant application)

School of Medicine, Columbia, SC 29208 Phone 803-434-6106

SOUTH DAKOTA

CENTER FOR RURAL HEALTH AND ECONOMIC DEVELOPMENT The center creates an interactive video conferencing network to provide residents of rural South Dakota with access to health care, education, community development, and business information. Video conferencing centers are installed in health care facilities in McPherson, Marshall, Spink, and Brown Counties, and in schools in McPherson, Marshall, and Roberts Counties. The service area population is 61,000. The sites are connected either through existing fiber-optic networks or through digital ISDN telecommunications links. Benefits include reduced travel and access to specialists and distance learning. Numerous public and private entities are collaborative partners in this project.

National Telecommunications and Information Administration grant of $375,000 towards a total project cost of $850,171 over two years FY 1996

Sister Mary Dennis Collins, Center for Rural Health and Economic Development, 911 East 20th Street, Suite 102, Sioux Falls, SD 57103 Phone 605-339-1703

HEALTH EDUCATION DEVELOPMENT SYSTEM, INC. (HEDS) A desktop computer conferencing system links 60 end users in five states, including 33 rural hospitals and 27 nursing homes. It enables rural health care providers to consult with medical specialists, communicate with government offices, and access medical libraries. HEDS links several IHS hospitals in Eagle Butte, Pine Ridge, Rosebud, Sioux Sans (Rapid City); several South Dakota towns; and a tribal facility called Morning Star Manor in Fort Washakie, Wyoming. Currently, HEDS and IHS are negotiating a partnership with the agency s educational division, the Black Hills Training Center. This partnership will extend service to all the tribes in North and South Dakota. HEDS offers, by satellite, six hours each week of continuing education targeted to multiple disciplines and provides list servers for common interests.

Rural Utilities Service grant of $300,000 FY 1995

Jan Smith, Health Education Development System, Inc., Box 187, Fort Meade, SD 57741 605-347-7117

OGLALA SIOUX TRIBE The Oglala Sioux Tribe in Pine Ridge, South Dakota, operates a Community Health Representative (CHR) Program that provides critical health services for elderly, homebound patients and for young mothers whose children require medical attention. This grant funds a digital wireless home health care service network, which uses a paging system to coordinate responses from health and emergency services to high-risk patients. Tribal health care professionals and patients use hand-held radios and computers for Internet access and to improve coordination and communications. Through the project s Tribal Community Health Information Network, CHR staff can access patient history information and search the Internet for nutritional data, antidotes to toxins, and emerging infectious diseases. Using these tools, CHR staff and field workers can improve their management of patients needs, including visitation schedules, pharmacy requirements, and emergency services coordination for homebound patients. The CHR Program uses a paging system because less than 50 percent of the households comprising the 23,000-member population dispersed over 2.8 million acres have telephones. Project participants include the CHR Program, IHS, the Bureau of Indian Affairs, the Oglala Sioux Tribe Public Safety Commission, and KILI radio.

National Telecommunications and Information Administration grant of $208,989 towards a total project cost of $546,286 FY 1997

Jim Watters, Community Health Representative, P.O. Box A, Oglala Sioux Tribe, Pine Ridge, SD 57770 Phone 605-867-5801

ST. LUKE S MIDLAND REGIONAL MEDICAL CENTER The Dakota Health Network is a collaborative effort involving 21 hospitals, 14 clinics, and 11 long-term care facilities in 11 counties within North Dakota and South Dakota. Over a period of three years, telemedicine sites will be established at these rural facilities, linking them with St. Luke s Midland Regional Medical Center. The system will be used for clinical consultations, rural health professions training, and data communications. Consults will be available for a range of specialty services, including teleconsultations for emergency medical personnel, home health providers, hospices, and mental health clinics. One network site will be located at an IHS hospital in Sisseston, South Dakota. Nonmedical use of the system by businesses and civic groups is encouraged in each community.

Office of Rural Health Policy three-year outreach grant total of $603,432 for FYs 1996 1998

Loren Lenard, Dakota Health Network, St. Luke s Midland Regional Medical Center, 305 South State Street, Aberdeen, SD 57401 Phone 605-622-5037, Fax 605-622-5127

SOUTH DAKOTA RURAL TELEMEDICINE This project supports three telemedicine networks in South Dakota that operate independently and are associated with the state s largest hospitals. Network members are the Rapid City Regional Hospital, the Sioux Valley Network, and the McKennan Network. Open system architecture allows patients to freely choose among hospitals. The Rapid City Regional Hospital Network became operational in February 1995 and is demonstrating store-and-forward technology for teleradiology and telecardiology with hospitals in Custer and Philip. Although the network currently uses dedicated T-1 lines, future expansions will use Switch 56 and ISDN lines. The project is included as a component of the ORHP/OAT s national evaluation of telemedicine.

The Rapid City Regional Hospital received grant funding from both ORHP and United States Department of Agriculture (USDA) for system development. The 1997 USDA grant expands the system to link six rural hospitals serving more than 50,000 residents in nine sparsely populated counties in South Dakota, Wyoming, and Nebraska. This grant allows speedy transmission and analysis of patient-related information.

The Sioux Valley Network has been operational since July 1994 and is demonstrating store-and-forward (for teleradiology) and interactive technologies. The interactive system is transmitted over ISDN lines and is used for telepsychiatry consultations, speech therapy, surgery follow-up, grand rounds, nursing education, physician assistant courses, administrative messages, etc.

The McKennan Health Services Network, established in December 1994, uses interactive video conferencing and store-and-forward applications at six hospitals ranging in size from a 450-bed tertiary hospital to an 18-bed rural hospital. The network has an eight-port bridge to provide connectivity for educational sessions and meetings. It will provide clinical telemedicine services in pulmonology, dermatology, neurology, orthopedics, surgical care follow-up, pediatrics, mental health, and trauma. The system will also be used for tumor conferences, grand rounds (gastroenterology internal medicine, psychiatry, neurology, pediatrics), distance education, administrative meetings, and association and community meetings.

Office of Rural Health Policy three-year telemedicine grant of $1,473,680 for system development FYs 1994 1996. In addition, the McKennan Health Services Network received a three-year telemedicine grant. FY 1997 - $282,109. The South Dakota State Department of Health provided $210,395 to support system development and printed a 1996 evaluation report.

Douglas Knutson, Telemedicine Coordinator, 445 East Capitol, Pierre, SD 57501-3185 Phone 605-773-5883, Fax 605-773-5904, E-mail <dougk@dohstate.us>

The Rapid City Regional Hospital received a Rural Utilities Service grant of $330,000 FY 1997 (Fund for Rural America grant based on a FY 1996 unfunded distance learning and telemedicine application)

Mary DeVany, McKennan Hospital, 800 East 21st Street, Sioux Falls, SD 57117-5045 Phone 605-322-6038, Fax 605-322-6036, E-mail <mary.devany@mckennan.org>

Lorna Ogle, Rapid City Regional Hospital, 353 Fairmont Boulevard, Rapid City, SD 57701 Phone 605-341-8013, Fax 605-399-4484, E-mail <logle@rcrh.org>

Dan VanRockel, Sioux Valley Hospital, 1100 South Euclid Avenue, P.O. Box 5039, Sioux Falls, SD 57106 Phone 605-333-7192, Fax 605-333-1993, E-mail <vanroekd@sioux.valley.org>

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICINE This project improves rural elder care through the state s Rural Development Telecommunications Network, which broadcasts interactive video programs on elderly health issues to 10 to 14 rural sites. This project both educates the consumer and provides information to assess elder health care barriers. Consortium members include the grantee, the State Department of Health, a community health center association, and the State Academy of Family Physicians.

Office of Rural Health Policy three-year outreach grant of $519,151 FYs 1994 1996

David Sandvik, M.D., University of South Dakota, 3625 5th Street, Rapid City, SD 57701 Phone 605-394-3140

The university s School of Medicine manages an NTIA grant to establish a two-way interactive link between the McKennan Hospital in Sioux Falls, South Dakota, and the Yankton Sioux Reservation IHS clinic in Wagner. The project uses a high-speed network with teleconferencing equipment to demonstrate how interactive video technology can be used to deliver child psychiatry services to Native American children with Attention Deficit Hyperactivity Disorder (ADHD). This project helps the Yankton Sioux overcome infrastructure problems such as a 120-mile travel distance from Sioux Falls by way of secondary roads and a lack of telephone transmission systems. An additional obstacle is the limited number (seven) of child psychiatrists practicing in the state of South Dakota. The project compares face-to-face clinical encounters with remote two-way interactive clinical sessions and evaluates the effectiveness of applying this telepsychiatry service to the Native American population. Project partners include the School of Medicine and its Department of Psychiatry, the McKennan Hospital, the IHS, and the Yankton Sioux Tribe.

National Telecommunications and Information Administration grant of $54,880, with a total project cost of $110,397 over 24 months FY 1997

Dr. Jessica Oesterheld, University of South Dakota, 911 East 20th Street, Sioux Falls, SD 58105 Phone 605-367-5960

The university s Fund for the Advancement of Medical Education and Research received a federal grant to support development of the Wegner Health Sciences Information Center to make data available to health professionals throughout the state of South Dakota. The center will be equipped with electronic access to health information and will serve as a means of equalizing access to clinical information for all health professionals, clinical facilities, and the public. The

grant will fund the construction of a local area network and a wide area network, along with the purchase of computers, hubs, servers, and switches.

Rural Utilities Service grant of $209,205 FY 1997

Dr. Robert C. Talley, University of South Dakota Medicine School, 1400 West 22nd Street, Sioux Falls, SD 57501 Phone 605-387-1300, Fax 605-357-1311

TENNESSEE

UNIVERSITY OF TENNESSEE, MEMPHIS Under a 1997 grant, the Department of Family Medicine will link two urban residency sites in Memphis with a rural residency site in Covington and a rural satellite clinic in Ripley to provide obstetric ultrasound imaging capabilities. The connection will also provide medical conferencing and distance learning opportunities for faculty, residents, and medical students through a fax connection with the university. The service area includes Tipon, Shelby, and Lauderdale.

Rural Utilities Service grant of $127,178, with a loan of $120,484 FY 1997

William MacMillan Rodney, M.D., Department of Family Medicine, University of Tennessee, 1127 Union Avenue, Memphis, TN 38104 Phone 901-448-6028, Fax 901-448-8006

UNIVERSITY OF TENNESSEE MEDICAL CENTER, KNOXVILLE The medical center project creates an integrated trauma telemedicine system for initial patient care by applying technology in ambulances, rural emergency departments, and a level-one trauma center. Care within the first hour of a trauma is critical because most preventable deaths occur from patients bleeding to death. The rural mountainous area mortality rate from auto accidents is higher than the national average. This technology application develops a new protocol using digitized still images of the accident scene, which are transmitted by emergency medical service providers using cellular telephones in ambulances to the receiving emergency room and the trauma center. The pictures help medical personnel decide whether a patient should be transported to a local hospital or to the trauma center and facilitate emergency room preparation for patient arrival. The project also supports a two-way interactive communications link between the local emergency room and the trauma center. Project partners include the grantee and three rural hospitals Woods Memorial Hospital, LaFollette Medical Center, and Morristown-Hamblen Hospital.

National Telecommunications and Information Administration grant of $292,957 towards a total project cost of $586,004 over 16 months FY 1997

Dr. Blaine Enderson, 1924 Alcoa Highway, Knoxville, TN 37920 Phone 423-544-2296 or 423-544-9305

In addition to the above project, the medical center received an ORHP/OAT grant for the University of Tennessee (UT) Telemedicine Network. The network uses interactive video conferencing to provide patient examinations at four rural sites (two hospitals and two clinics). The network began operating in September 1995 with one rural hospital site, expanded to a second in 1996, and, under this grant program, will expand to two more clinics. Interactive video conferencing

is used for medical consultations in hospitals and clinics and in patients homes. Live EKG data are transmitted from ambulance using cellular telephone technology. The UT Telemedicine Network will provide cardiology, dermatology, gastroenterology, surgery follow-up, rheumatology, oncology, obstetrics, family medicine, internal medicine, home nursing care, and other medical services. It will also be available for medical conferences, physician-to-physician consultations, and community service.

Office of Rural Health Policy three-year telemedicine grant. FY 1997 - $203,503

Samuel Burgiss, Ph.D., University of Tennessee Medical Center at Knoxville, 1924 Alcoa Highway, Box 70, Knoxville, TN 37920 Phone 423-544-8059, Fax 423-544-8975, E-mail <sburgis1@utk.edu>

TEXAS

CHAPARRAL HEALTH CLINIC The clinic, in partnership with Gonzales Community Health Center at Nixon-Smiley and the South Texas Rural Health Services at Cotulla, will develop an interactive video conferencing network with a connection to the University of Texas Health Science Center at San Antonio. These communities are designated as health professional shortage and medically underserved areas. The project also increases the communities chances of retaining medical personnel by decreasing professional isolation through peer/expert support and continuing medical education.

Rural Utilities Service grant of $294,400 FY 1997

F.H. Canales, Jr., Chaparral Health Clinic Corporation, P.O. Box 589, Benavides, TX 78341 Phone 512-256-3322, Fax 512-256-3324

FEDERATION OF STATE MEDICAL BOARDS (FSMB) OF THE UNITED STATES, INC. This planning project addresses interstate physician licensing for telemedicine. FSMB will develop a model licensure process for the practice of interstate telemedicine consultations and will work with state medical boards to implement the model.

National Telecommunications and Information Administration grant of $69,342 towards a total project cost of $77,000 FY 1995

Dana Fuqua, Federation of State Medical Boards of the U.S., Inc., 400 Fullerwiser Road, Suite 300, Euless, TX 76039 Phone 817-868-4056

LAREDO COMMUNITY COLLEGE Project SALUD, led by Laredo Community College, in partnership with 12-other education, health, and public information agencies, uses video conferencing technology to link 13 interactive learning sites. Project SALUD serves a four-county area. The area s 219,414 residents along the U.S.-Mexico border have a high poverty rate and serious health and education problems. Ninety-five percent of the population is Hispanic, and 60 percent are 25 years of age or younger. One of four adults in the service area cannot read, and medical incident rates for heart disease, breast cancer, and diabetes are much higher than the national

average. Project SALUD enables high school students to access information on health-related career options, provides honor courses for students pursuing careers in the allied health fields, and offers adult literacy courses and continuing education opportunities for public health professionals. Project participants include the school districts, Mercy Regional Medical Center, and Texas A&M University.

National Telecommunications and Information Administration grant of $586,620 towards a total project cost of $1,175,126 over 18 months FY 1997

Diana Gonzalez, Laredo Community College, West End Washington Street, Laredo, TX 78040 Phone 956-721-5142

PRIMARY CARE SERVICES, INC. This project provides access to primary care services, specialty services, and emergency medical services by establishing a rural health clinic, which is linked to the newly established Texas Tech University and Big Bend Regional Medical Center Telemedicine System. Specialized services will be provided for primary care, preventive health, maternal child health, continuing education, emergency medical training, and administration. Consortium members include Primary Care Services, Inc., a volunteer fire department, a school district, the Texas Department of Health, a rural hospital, and a university health center.

Office of Rural Health Policy three-year grant of $454,437 FYs 1994 1996

Jennifer Hogue, Primary Care Services, Box 200, Terlingua, TX 79830 Phone 915-371-2207

RURAL EMERGENCY EDUCATION NETWORK TELECOMMUNICATIONS This project uses interactive telecommunications technology to improve emergency care services through a continuing education network for emergency care personnel. The network links rural providers with each other, as well as with more specialized care sites. Consortium members develop a wide range of educational programming for rural emergency medical technicians. Members are Stephen F. Austin State University, Piney Wood Area Health Education Center, the Council for the Advancement of Rural Education, the University of Texas Medical Branch, and the University of Texas Houston Health Science Center.

Office of Rural Health Policy three-year outreach grant of $598,024 FYs 1994 1996

Linda Whitling, Steven F. Austin State University, Box 6078 SFA Station, Nacogdoches, TX 75962 Phone 409-639-7823

SAM HOUSTON STATE UNIVERSITY, RURAL EDUCATION SYSTEM NETWORK (RESNET) Sam Houston State University provides medical and educational services to 45,000 people in southeast Texas through an 85-mile fiber optic network. The network links a medical clinic, a hospital, the 300-member Alabama-Coushatta Indian tribe, and two county extension offices. Services include 24-hour teleradiology services, special education, teacher-sharing for high school level courses, access to the Internet, and continuing teacher development.

Rural Utilities Service grant of $340,000 FY 1995

Dr. Gordon Plishker, Sam Houston State University, P.O. Box 448, Huntsville, TX 77341 Phone 409-294-3692

TEXAS A&M UNIVERSITY, Center for Public Leadership Studies This project conducts an in-depth analysis of adoption processes and use of telecommunications technology by medical institutions and personnel in six rural Texas communities. The objective is to specify those factors that facilitate or hinder the acceptance and long-range commitment to two-way interactive video and continuing education. Specific objectives include the development of guidelines to aid in determining the best locations for introducing telemedicine and the development of optimal strategies for encouraging smooth adaptation and maximum use of telecommunications technology in rural areas. Conclusions are drawn from nine organizational settings and literature.

Agency for Health Care Policy and Research grant amount of approximately $950,000 FY 1996

William Alex McIntosh, Texas A&M University, Center for Public Leadership Studies, *College Station, TX 77843-4351 Phone 409-862-8850*

UTAH

RURAL UTAH TELEMEDICINE ASSOCIATES The Rural Utah Telemedicine Associates provides health care services, management, and consultations for rural Utah residents by using a telecommunications-equipped mobile vehicle for primary and specialty consultations. The service area covers five counties, which comprise 21 percent of Utah s land area.

Rural Utilities Service grant of $333,330 FY 1996

David Goddard, Rural Utah Telemedicine Associates, P.O. Box 2151 Cedar City, UT 84721 Phone 801-865-9950

UTAH DEPARTMENT OF HEALTH This project adds satellite public health offices in 15 rural and frontier southern counties to the Utah Public Health Information Network. The network provides electronic mail service and improves access to state health and immunization status information, Medicaid eligibility rules and other regulations, and to the Internet. Twenty-nine clinics and administrative offices participate in the network.

National Telecommunications and Information Administration grant of $222,421 towards a total project cost of $514,424 FY 1995

Laverne Snow, Office of Strategic Planning and Evaluation, Utah Department of Health, 288 North and 1460 West, Salt Lake City, UT 84116 Phone 801-538-6101

UNIVERSITY OF UTAH This project establishes a telehealth video network for providing health services to children with special needs, and connects the Department of Health s Bureau for Children with Special Health Care Needs in Salt Lake City to two local health department offices in Vernal and Richfield, Utah. Specific services include occupational and physical therapy, initial and follow-up speech pathology testing and intervention, and neurological follow-up examinations. Another network use is for the training and continuing education of public health nurses to meet newly required Baby Watch Early Intervention Program requirements. The Vernal and Richfield communities lack pediatric specialty services and therapists who can provide initial screening and follow-up examinations. During the initial face-to-face exam, a physical therapist, for example, shows the mother of a child with cerebral palsy some specific exercises. Follow-up telehealth consultations allow the therapist to observe the mother working with the child, suggest modifications, address specific concerns of the mother, assess progress, and recommend additional exercises.

National Telecommunications and Information Administration grant of $369,951 towards a total project cost of $740,450 over 24 months FY 1997

Dr. Marta Peterson, Dermatology Clinic and Office, Health and Science Center, 50 North Medical Drive, Salt Lake City, UT 84132 Phone 801-581-7837

WEBER STATE UNIVERSITY The university, which has provided preprofessional and in-service education in health projects, creates an On the Move Program using advanced telecommunications, computers, and other technologies to deliver health profession classes in rural Utah. Grant funds will be used to purchase high-end personal computers to be placed in rural health care facilities for desktop conferencing.

Rural Utilities Service grant of $115,000 FY 1997 (Fund for Rural America; based on unfunded FY 1996 distance learning and telemedicine application)

Peg Waherry, Weber State University, 4005 University Circle, Ogden, UT 84408 Phone 801-826-7227

VIRGINIA

APPAL-LINK CUMBERLAND MOUNTAIN COMMUNITY SERVICES This project has grown to nine sites and uses interactive telecommunications technology to improve and integrate mental health and substance abuse services in rural southwestern Virginia. Covering 20,000 square miles, the telemedicine system links the Southwestern Virginia Mental Health Institute to seven public community services boards (community mental health centers). Service connectivity and continuity of care are the central concepts, the project focusing on close coordination of patient care, from hospitalization through outpatient treatment of individuals with serious and persistent mental illness. Services provided through the telemedicine system include psychiatric evaluation and medications review, prescreening, commitment hearings, forensic evaluations, predischarge planning to facilitate community placement, discharge follow-up, family visits, staff training, supervision, and education and conferences. Recently, a secondary hub site was added at the Southwest Virginia Alcohol Treatment Program. Specialized services for the deaf and hard of hearing, including interpreting and

counseling, are provided to distant sites from a single hub site. This project is included as a component of ORHP/OAT s national evaluation of telemedicine.

Office of Rural Health Policy three-year telemedicine grant of $868,327 FYs 1994 1996

Henry A. Smith, Director of Mental Health Services, Southwest Virginia Telepsychiatry Project (APPAL-LINK), Cumberland Mountain Community Services, P.O. Box 810, Cedar Bluff, VA 24609 Phone 540-964-6702, Fax 540-964-5669

SOUTHSIDE VIRGINIA COMMUNITY COLLEGE A two-way interactive video system connects 10 rural sites and provides professional development opportunities for health care providers at four regional hospitals.

Rural Utilities Service grant of $300,000 FY 1995

Linda Sheffield, Southside Virginia Community College, 109 Campus Drive, Alberta, VA Phone 804-949-1010

UNIVERSITY OF VIRGINIA The university, in partnership with the Southwest Virginia Alliance for Telemedicine, uses teleconferencing, store-and-forward technologies, and Internet access to reach four remote communities in Lee, Buchanan, Russell, and Wise Counties. The project enhances the quality and cost-effectiveness of repeated health clinic visits through remote consultation and patient education. Health care facilities in this remote rural region consist of small community hospitals (approximately 100 beds), rural primary care medical practices, and clinics. Area health indicators for heart disease, chronic obstructive pulmonary disease, and diabetes are higher than the national average. Economically, the area represents Virginia s poorest, based on per capita income and unemployment rate, and has the state s highest rates of Medicaid enrollment. The project uses PC-based clinical workshops as part of a high-speed network with video conferencing capabilities that include voice, video, data, high-resolution still imagery, and electronic medical transportability among sites. The University of Virginia houses the system, with connections to four rural locations. The project will phase in telemedicine consultative and patient educational services to community residents and health professionals. Evaluation strategies are based on clinical effectiveness, cost effectiveness, and provider and patient satisfaction with telemedicine services delivered to these rural, medically underserved communities. Partners include the University of Virginia at Charlottesville and the Thompson Family Health Center, Lee County Community Hospital, Norton Community Hospital, and Stone Mountain Health Clinic.

National Telecommunications and Information Administration grant of $412,269 towards a total project cost of $1,294,819 over 36 months FY 1997

Karen Rheuban, M.D., Office of Telemedicine, Health Sciences Center, P.O. Box 727-79, University of Virginia, Charlottesville, VA 22908 Phone 804-924-5470

WASHINGTON

EASTERN WASHINGTON UNIVERSITY A distance learning educational and medical network is established in northwest Washington to connect the university, a community college, an educational service district, a medical center, end users, and several rural school districts in Stevens, Ferry, and Pend Oreille Counties.

Rural Utilities Service grant of $400,000 FY 1994

Dr. Cynthia Cutler, MS 10, Eastern Washington University, Cheney, WA 99004 Phone 509-359-6669

LINCOLN COUNTY PUBLIC HEALTH HOSPITAL DISTRICT The Lincoln Rural Health Telemedicine project receives funding from both ORHP/OAT and RUS. The project links an urban hospital and four rural eastern Washington hospitals to a functioning, clinically comprehensive telemedicine network called Inland Northwest TeleHEALTH Service Network (INTS) that currently serves eight eastern Washington hospitals. The hospitals to be linked are Lincoln Hospital (Davenport), Odessa Memorial Hospital (Odessa), Lake Chelan Community Hospital (Lake Chelan), Whitman Hospital and Medical Center (Colfax), and Shriner s Hospital (Spokane). The original structure for the INTS network was installed in early 1997. The INTS network is a hub-and-spoke arrangement designed to transmit interactive video over a private T-1 network. The rural sites will receive VTEL Friendly Rollabouts Engineered for Doctors units, while the urban sites will receive VTEL LC monitor units. The expansion of the INTS network will provide clinical telemedicine services in emergency care, mental health/geropsychiatry, radiology, pathology, perinatology, adult rehabilitation, dermatology, and children with special needs to the five newly linked sites. The network will have the ability to broadcast nonclinical applications, including continuing professional education, community health education, and teleconferencing. The RUS grant and loan package will be used to purchase video conferencing equipment and digital voice and data encoding technology.

Office of Rural Health Policy three-year telemedicine grant. FY 1997 - $295,000

Rural Utilities Service grant of $70,212, with a $149,945 loan FY 1997

Denny Lordan, Director, Inland Northwest Telehealth Services, P.O. Box 248, Spokane, WA 99210 Phone 509-835-4866, Fax 509-459-4392, Toll Free 888-258-9632, E-mail <lordanand@inhs.org>

NORTHWEST REGIONAL PRIMARY CARE ASSOCIATION The Northwest Regional Primary Care Association, a nonprofit association of community and migrant health centers in Washington, Oregon, Idaho, and Alaska, develops a plan for a Regional Electronic Primary Care Network. The network improves clinical services, particularly in rural areas, by linking primary care providers serving underserved populations. It also facilitates the sharing of data and best practice information among the health centers. The association represents 40 community and migrant health centers and has nearly 200 clinical sites.

National Telecommunications and Information Administration grant of $24,084 towards a total project cost of $48,601 FY 1995

Jennifer Bright, Northwest Regional Primary Care Association, 4154 California Avenue Southwest, Seattle, WA 98116 Phone 206-932-2133

UNIVERSITY OF WASHINGTON HEALTH SCIENCE CENTER The University of Washington Academic Medical Center Regional Telemedicine Network connects health professionals and patients from big cities, small towns, and rural, sparsely populated areas in Washington, Wyoming, Alaska, and Idaho to provide timely access to health information. The university links clinical and public health partners at selected sites in the five-state area through a regional telemedicine network that includes a world wide web interface to electronic medical records and secure clinical E-mail for clinician-to-clinician and clinician-to-patient communication.

National Library of Medicine contract amount unavailable. Performance period is September 30, 1996, to August 31, 1999.

Sherrilynne Fuller, Ph.D., University of Washington, A-327 Health Science Center, Box 356340, Seattle, WA 98195-6340 Phone 206-616-5808

VIRGINIA MASON MEDICAL CENTER The center implements a two-way telemedicine network connecting four sites in Washington State s rural Olympic Peninsula to improve the delivery of health care to patients diagnosed with chronic pain. The interactive network includes E-mail capabilities and a chronic pain management home page. It establishes a link between Virginia Mason Medical Center in Seattle and four sites on the Olympic Peninsula Forks Community Hospital, West End Outreach Center, Quileute Tribal Health Center, and an IHS clinic. The sites are equipped with two-way desktop televideo units that enable the use of two-way interactive compressed audio and video equipment. Physicians, physical therapists, occupational therapists, rehabilitation psychologists, vocational counselors, and remote health care providers use the system to consult with patients. The home page will enable health care providers, patients, and their families to access in-depth information and educational resources on chronic pain management. A chronic pain management plan can reduce doctor visits by 36 percent.

National Telecommunications and Information Administration grant of $235,434 towards a total project cost of $474,499 over 18 months FY 1996

Keith Lundberg, Virginia Mason Medical Center, 1100 Ninth Avenue, Seattle, WA 98101 Phone 206-222-6351

WAMI RURAL TELEMEDICINE NETWORK, UNIVERSITY OF WASHINGTON SCHOOL OF MEDICINE The network connects a total of six remote rural communities in five states with the University of Washington Academic Medical Center (UWAMC) in Seattle. Participating rural sites are Colville and Pomeroy, Washington; Thermopolis, Wyoming; Petersburg, Alaska; Ronan, Montana; and Driggs, Idaho. UWAMC sites include the University of Washington Medical Center, Children s Hospital and Medical Center, Harborview Medical Center, and the University of Washington Medical Center Roosevelt Clinic. Scheduled consultations are available in a wide range of specialty areas including dermatology, orthopedics, radiology, rheumatology, psychiatry, and pediatrics. Using PC-based, desktop units for video conferencing and digital image transmission, the

network facilitates both real-time and store-and-forward communications among rural providers, patients, and consultants. This project is included as a component of ORHP s national evaluation of telemedicine.

Office of Rural Health Policy three-year grant of $1,522,979 FYs 1994 1996

Peter House, Telemedicine Project Director, University of Washington School of Medicine, Department of Family Medicine, 1705 Northeast Pacific Street, Annex 4, P.O. Box 330, Seattle, WA 98105-5304 Phone 206-616-4985, Fax 206-616-4990, E-mail <peter_house@fammed.washington.edu>

WEST VIRGINIA

PRESTERA CENTER FOR MENTAL HEALTH SERVICES, INC. The Prestera Center serves four rural counties in western West Virginia. This project uses ISDN and regular phone lines for real-time video conferencing and consultation between sites and Prestera s professionals/specialists at the Huntington main office. The project s purpose is to increase staff ability to handle more patients, reduce travel time, and allow staff to interact and consult with each other at different locations. Prestera s patient load is approximately 13,500. The service area includes Cabell, Lincoln, Mason, and Wayne Counties; the Urban Enterprise Community; and the city of Huntington.

Rural Utilities Service grant of $37,389, with a loan of $23,823 FY 1997

Robert Hansen, Prestera Center for Mental Health Services, Inc., Route 60, Huntington, WV 25703 Phone 304-525-7851, Fax 304-525-1540

PRINCETON COMMUNITY HOSPITAL ASSOCIATION, INC. This project places three computerized radiology devices at three rural health clinics in southern West Virginia so family practice doctors can have their X-ray images interpreted by radiology staff at the Princeton Community Hospital. The network connects with an existing FUJI imaging network at the Princeton Community Hospital through a wide area network being developed by the hospital for Mercer County. The service area includes Monroe and Wyoming Counties.

Rural Utilities Service grant of $145,946, with a loan of $154,044 FY 1997

Steve Curry, Princeton Community Hospital Association, Princeton Community Hospital, P.O. Box 1369, Princeton, WV 24740 Phone 304-487-7735, Fax 304-487-7730

UNIVERSITY OF WEST VIRGINIA, CONCURRENT ENGINEERING RESEARCH CENTER The center is a team leader for a nine-institution consortium to demonstrate the viability of secure clinical telemedicine on public telecommunications networks. Rural primary care physicians, physicians assistants, and other authorized users will have secure access to electronic medical records and patient monitor data, and will be able to confer with distant collaborating health care providers in treating patients.

National Library of Medicine estimated contract amount of $4,110,000. Performance period is September 30, 1996, to September 29, 1999.

Ramana Reddy, Ph.D., Concurrent Engineering Research Center, West Virginia University, 886 Chestnut Ridge Road, Morgantown, WV 26506 Phone 304-293-7226

UNIVERSITY OF WEST VIRGINIA, ROBERT C. BYRD HEALTH SCIENCE CENTER The university s telemedicine project, known as Mountaineer Doctor Television (MDTV), is a 15-site network using fully interactive audio and video and offering consultative services and distance education for health professionals. MDTV is a HCFA test site to investigate the effect of Medicare payment for telemedicine on inpatient access and quality of care. HCFA project goals include developing an inpatient teleconsultation coding system, increasing the number of inpatient teleconsultations, and reducing interhospital transfers by 50 percent. The feasibility and cost-effectiveness of telemedicine follow-up for patients returned from a referral center to a rural hospital for the remainder of their hospitalization will also be evaluated. Researchers at the University of Michigan are also involved in evaluating this project.

Health Care Financing Administration three-year grant of $1,878,168 FYs 1994-1997

Office of Rural Health Policy grant. FYs 1992 1997 - $3,100,000

Bill Pritt, M.D., Program Director, Mountaineer Doctor Television (MDTV), West Virginia University, Robert C. Byrd Health Science Center, Health Sciences South, Room 1244, P.O. Box 9080, Morgantown, WV 26506-9080 Phone 304-293-6926 or 6945, Fax 304-293-8565, E-mail <bpritt2@wvuhsc1.hsc.wvu.edu>,<bpritt@hsc1.hsc.wvu.edu>

Kevin Halbritter, M.D., Robert C. Byrd Health Science Center, West Virginia University, P.O. Box 9080, Morgantown, WV 26506-9080 Phone 304-293-1964 (HCFA pilot project)

WISCONSIN

GUNDERSON LUTHERAN HOSPITAL This project links the Tricounty Memorial Hospital and Nursing Home in Trempealeau County and Prairie du Chien Memorial Hospital in Crawford County with the Gunderson Lutheran Hospital in La Crosse, Wisconsin. This medical link enables the two rural hospitals and local family practice physicians to access educational programs and teleconsultations for teleradiology and emergency, crisis, and trauma care, and provides access to enhanced medical air transport and state-of-the-art DS3 transmission capabilities over fiber optic lines.

Rural Utilities Service grant of $63,711 FY 1994

Paul Fisch, Medical Media, Gunderson Lutheran Hospital, 1910 South Avenue, La Crosse, WI 54601 Phone 608-782-7300

MARSHFIELD MEDICAL RESEARCH AND EDUCATION FOUNDATION The current network consists of a broadband DS3 voice, data, and interactive and video conferencing network, with a hub at Marshfield Clinic a tertiary referral center and three spoke locations at regional clinics in Rice Lake, Chippewa Falls, and Minocqua-Woodruff. The grant will provide for the addition of two spoke sites at Ladysmith and Park Falls, using interactive video conferencing systems and a DS3 circuit for data. Custom-built telemedicine units similar to those in the VTEL Friendly Rollabouts Engineered for Doctors system will be located at Ladysmith and Park Falls. The network also provides for the extension of the Marshfield Clinic Wide Area Data Network to desktop PCs at all locations. The telemedicine network will provide the following clinical telemedicine services: emergent stabilization, occupational medicine, mental health, teledermatology, teleradiology, nurse triage, compliance counseling, patient test reporting, electronic health education, and immunization action. The system will also be used for tumor conferences, distance education, and administrative and community board meetings. CME and other educational programs can be originated from several lecture halls at the Marshfield Campus.

Office of Rural Health Policy/OAT three-year telemedicine grant. FY 1997 - $382,887

Michael Hillman, MD, Marshfield Medical Research and Education Foundation, 1000 North Oak Avenue, Marshfield, WI 54449 Phone 715-389-3670, Fax 715-389-4788, E-mail <hillman@mafldclin.edu>

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